

EDITORIAL

Forward March of Production

PRODUCTION is a live topic in the automotive industry. Those sophisticated blasé manufacturing men who tell you that all of the major developments in automotive production are behind and that the future holds only relatively small advancement are out of step with the procession. Nobody could have sat through the sessions at the Society of Automotive Engineers' Production meeting last week without coming away with that impression. True, only about five per cent of the membership of the Society went to the Cleveland sessions and found out what is going on. That just means that something like 95 per cent of the members of the organization missed a bet.

What really is happening is this: production progress no longer lies in the obvious improvements; it can be made no longer with only a superficial knowledge of science and organization. Understanding of the more complex and more highly technical phases of metallurgy, management, material handling, gear design and a host of other factors has become necessary to future advance. The men who are making the real progress today are those who are willing to study and discuss such problems; who hesitate scoffingly to call "highbrow" those things which they cannot understand readily and which they didn't have to understand to increase production efficiency ten years ago.

The lively and spirited way in which many of these detailed, complex phases of production were argued and talked over at the S. A. E. meeting last week indicated clearly that a good many automotive manufacturing men are more than willing to spend the effort necessary to insure material future advancement.

Small Town Accidents

FATAL traffic accidents are decreasing in large cities and are increasing in small towns of less than 10,000 population, according to a recent bulletin issued by Robbins B. Stoeckel, commissioner of Motor Vehicles, Connecticut. The reason for this condition, Mr. Stoeckel says, is quite obvious. "Towns of larger size are now maintaining careful supervision of traffic while the small towns either have nobody or have some person paid by a fee system or on part time, while the traffic is increasing all the time. Every town needs a state policeman. When that is attained and there are enough state policemen so that one can be allotted to each small town for supervision of traffic the situation will better itself promptly."

The biggest future market for automobiles lies in the small towns. Traffic accidents have become a real sales resistant in the larger cities. If proper traffic

regulation can be made to parallel increasing car registrations in the small towns, much human suffering will be avoided and sales progress will be more steady than otherwise would be possible. The automotive manufacturer does well to spread traffic safety education along with his car sales.

Bus Growth

IF any further evidence were needed in proof of the fact that buses are filling a public need for quick, comfortable and economical transportation the recent report issued by The Omnibus Corp. of the revenue passengers carried by its three operating companies during the first eight months of 1925 as compared with the same period last year would provide it abundantly. The measure of value for any public service is the extent to which the public avails itself of the service, and if the record of these three companies can be taken as indications of the trends in the bus industry the public is becoming sold more and more thoroughly on the worth of bus transportation.

August	1924	1925	Per Cent Increase
Peoples Motorbus Co., St. Louis	1,075,897	2,124,680	96
Chicago Motor Coach Co....	5,540,932	6,221,641	12
Fifth Ave. Coach Co., New York	5,535,940	6,399,528	16

January-August, inclusive

Peoples Motorbus Co., St. Louis	7,118,917	16,410,105	131
Chicago Motor Coach Co....	32,292,245	40,199,122	24
Fifth Ave. Coach Co., New York	40,561,562	47,929,946	18

The tremendous gain recorded by the Peoples Motorbus Co. is due in part to the opening of 43 miles of new routes during the year. In the other cities only minor additions were made to bus lines in operation so that the number of passengers carried is a fair criterion of the increasing popularity of this form of conveyance.

Really important strides in long distance bus transportation also have been made this year. Development in the West has continued, while a large number of important lines between Eastern cities have come into being recently. Both Wanamaker's and Gimbel's department stores now are running bus service between their New York and Philadelphia stores, while it is understood that the Wanamaker line is to be extended to Washington in the near future.

It is interesting to note that business men and salesmen, as well as pleasure travelers, are using many of the long distance bus routes regularly. These bus routes are filling a definite transportation need without pretending to compete with the railroads so far as mass transportation is concerned.

Our Industry Today

Car and Truck Production Ahead of Last Year for Most Companies—Ford Now Rapidly Gains—Exports Heavy

NEW YORK, Sept. 24.—The decrease of approximately 140,000 in car and truck production in August as compared with July, is an indication of the divergent courses taken during the last six or eight weeks by the leading factors of the industry. A majority of the producers reported gains in August and early September over the July levels, but Ford output has been at the lowest point of recent years. Ford production normally is slightly more than 50 per cent of the total for the industry.

As September draws near its close, the situation is being reversed, and Ford is rapidly gaining while some of the others are tapering off. But condition on the whole continue to be better than they were last year at this time. This is emphasized by reports of the representative parts, accessory and service equipment manufacturers, showing that the year to date has been 30 per cent over the corresponding period of 1924 in volume of business. A survey of prospects in these allied industries indicates that about the same ratio of gain will be continued until the end of the year.

At the same time, the current business being done by original equipment companies, and by the automotive steel producers, indicates clearly a progressive decline in car production from now on. Truck and bus output is being maintained on a more even basis, and there is no indication of very considerable month to month changes in this field.

Automobile Exports Gain

The largest gains for 1925 so far have been in exports of motor vehicles. If export business for the last six months is equal to that of the first six, the total for the year will be about 540,000 vehicles, as compared with the record of 377,000 made last year. An interesting sidelight of this situation is that the medium and high priced vehicles have apparently been gaining on the low priced cars. The parts makers have not been doing so well overseas this year, a reflection of the totally different conditions they have to face in foreign sales. One group of parts producers, however—the tire manufacturers—are continuing to make progress in the face of very bitter European competition.

NEW FREIGHTING SYSTEM

CHICAGO, Sept. 23.—A new freighting system between Chicago, and Waukegan, Ill., and Racine, Kenosha and Milwaukee, Wis., has been inaugurated by the Westport Steamship Co. and the International Motor Traction Co. The system involves use of trucks in picking up merchandise and conveying it to docks and later conveying it from ship to consignee at destination.

Joint Meeting Will Talk Car Troubles

N. A. C. C. and S. A. E. Announce Interesting Program—Equipment Show

CHICAGO, Sept. 23.—At the third annual joint meeting of the Society of Automotive Engineers and the National Automobile Chamber of Commerce, to be held here at the Hotel La Salle Nov. 9-10, the main topic of discussion will be trouble prevention. Among the topics scheduled are "Maintenance for the Protection of the Car Owner's Investment," "Corrosion and Lubrication," "Designing with Consideration for Repair Men's Tool Equipment," "Diagnosis of Troubles," "Fuel from a Service Standpoint" and "The Year's Developments in New Devices for Improving Car Operation." There will be morning and afternoon sessions on each of the two meeting days, the first and last being in charge of the N. A. C. C. Service Division. The S. A. E. will be responsible for the Monday afternoon and Tuesday morning sessions.

The Automotive Equipment Association show will be held at the same time at the Coliseum, and a conference with members of that association and the factory service managers will be held Wednesday morning, following the official service convention.

CLYNO CO. ANNOUNCES MODELS

LONDON, ENGLAND, Sept. 13 (by mail).—A British maker of light cars, which entered the passenger car side of the industry only three or four years ago in quite a small way, having previously made motorcycles only, is the Clyno Co., which announces a program of 15,000 cars for next year. This concern competes directly with the Morris-Cowley range, the lower priced 12 h. p. model, and last week gave out its prices for 1926, two days after Morris announced his; the new Clyno prices are found to be identical with Morris where corresponding bodies are concerned.

Automotive Industries Moves to Philadelphia

Beginning with the next issue (October 1), AUTOMOTIVE INDUSTRIES will be published in Philadelphia in the new plant of the Chilton Class Journal Co. at Fifty-sixth and Chestnut Streets. All communications intended for the Editor or for the circulation or advertising departments should, from now on, be addressed there.

Rickenbacker Plans Expansion Program

NEW YORK, Sept. 22.—A minority interest in the Rickenbacker Motor Co. of Detroit has been purchased by Noyes & Jackson, members of the New York and Chicago Stock Exchanges, and W. C. Jackson, of Chicago, and A. G. Boesel, of New York, are to be added to the board of directors. The seven present directors are department heads in the Rickenbacker organization, and heretofore no banking interests have been represented there. The company announces that this step will mark the beginning of a rapid expansion program, the first step of which will be the amalgamation of a body concern with the Rickenbacker Motor Co. Another feature of the expansion program will be the sales program of the Rickenbacker low-priced eight-cylinder car. More than forty foreign agencies have already been established.

NEW KISSEL FEATURES

HARTFORD, WIS., Sept. 23.—A dual oil purifier, an air cleaner and a gasoline strainer are three new features which have been made regular equipment on both the Kissel six and eight-cylinder lines. The oil purifier is made under the Kingston-Colombe patents and removes moisture and fuel dilution as well as foreign solid matter in the oil. The gasoline strainer is a Gas-co-lator.

HUDSON AND ESSEX GROWTH

DETROIT, Sept. 22.—More than 200,000 Hudson and Essex cars have been manufactured to date this year, according to figures released by the Hudson Motor Car Co.

The growth of Hudson-Essex in recent years may be judged from the fact that production was 60,000 cars in 1922; 88,000 in 1923 and 128,000 in 1924.

Car Makers Buying Steel Sheets Heavily

Future as Well as Immediate
Requirements Are Now
Being Supplied

PITTSBURGH, Sept. 24—Automobile buying of sheet steel continues exceptionally heavy and American Sheet & Tin Plate Co. last week did the largest business in sheets since the first week in February.

Buyers are more alive to future needs and are providing for them as well as for their immediate requirements. The Iron Age finished steel composite price stands at 2.39 cents per pound for the sixth successive week, and this is nearly 2 per cent lower than two months ago.

Demands of motor vehicle manufacturers on body makers are contributing largely to the strong buying of sheets. Continuance of the present price situation is seen in efforts of some steel manufacturers toward large operation, despite seasonal limitations and any settled policy of consumers to limit stocks.

Operations Increasing

Subsidiaries of U. S. Steel are now operating over 75 per cent of capacity in steel manufacturing departments and the Carnegie Steel Co. is operating at 76 per cent against 73 the previous week.

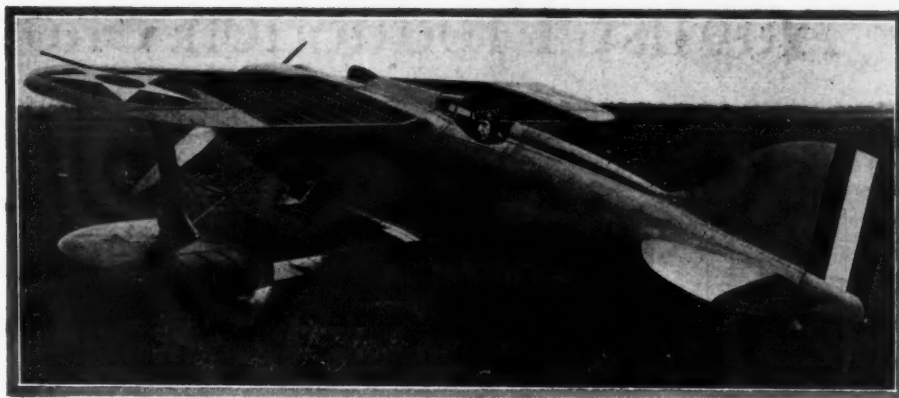
McClintock-Marshall Co. has obtained the order for the assembly plant of the Ford Motor Co. at Somerville, Mass., calling for 2300 tons of steel. Ford orders are said to be 250,000 cars ahead of production, and this emphasizes the demand on body makers which in turn is reflected in the strong buying of sheets.

The Iron Trade Review says that demands are proving greater than previous estimates, which, with mill deliveries less prompt and prices steadied, provides more incentive to extend commitments. Formal inquiry from consumers, which has been limited, is reappearing in volume, especially in the Middle West.

Road Building Plan Is Proposed for Kentucky

LOUISVILLE, KY., Sept. 22—A \$100,000,000 road bond issue bill will be introduced in the 1926 session of the Kentucky Legislature, which convenes next January, according to State Senator W. Moss, who introduced similar measures calling for \$50,000,000 in road bonds in the 1922 and 1924 sessions. A \$75,000,000 bond issue, of which \$50,000,000 was intended for road building and \$25,000,000 for the eleemosynary institutions of the State, was defeated in the general election of last November.

Three plans for completing Kentucky's road system are outlined by Senator Moss. One calls for the doubling of the present automobile and gasoline tax; the second is the use of the present "Pay



Lt. A. J. Williams and the Navy Curtiss Plane Which He Will Pilot in the Pulitzer Trophy Race, Mitchell Field, Long Island, Oct. 10

as You Go" system, and the third calls for a bond issue of \$100,000,000.

While Kentucky has only 2500 miles of completed roads in a primary system of 7000 miles and is badly in need of more highways, it is the general opinion that a road bond issue will not be favored by the voters if such an issue necessitates an increase in automobile and gasoline taxes. Kentucky motorists are now paying a gasoline tax of three cents, State registration fees of forty cents a hundred pounds, twenty-five cents a horsepower, plus municipal operating license of from \$5 up and State, county and municipal personal property tax.

Transportation Survey Made in Washington

WASHINGTON, Sept. 24—The cost of driving a private automobile, assuming an average load of 1.9 passengers per vehicle is estimated here at 5.85 cents per passenger-mile. It is further shown that regular street car riders pay the street car companies 2.44 cents for every mile they travel; regular bus patrons pay 3.66 cents per passenger-mile; while the Washington taxi rate averages 23.90 cents per passenger-mile.

These averages represent the day-in and day-out experience of approximately one-half of the working population of Washington, says Major William E. R. Covell, assistant engineer commissioner of public utilities commission, under whose supervision the traffic and transportation survey has been made in the national capital by McClellan and Junkersfeld, Inc., New York, at the expense of the North American Company.

NORTHWAY COMMITTEE REPORT

BOSTON, Sept. 23—The Northway Investigation and Protective Committee, organized some time ago, will be ready to make a report shortly, which is to be followed by a fight in the courts to return Northway Motors to the stockholders.

Another committee, called the Northway Reorganization Committee, with which one or more of the officials of the Amalgamated Motors Corp. are identified, is also at work on reorganization plans.

Curtiss Planes to Enter Air Races

Will Be Main Contestants in
Pulitzer Trophy Event
in October

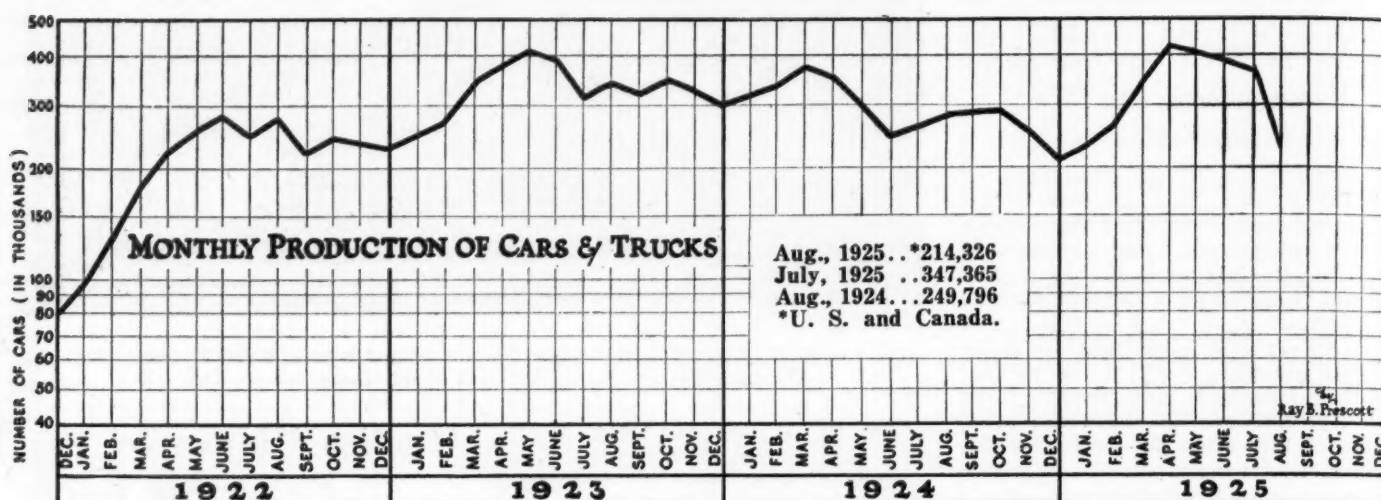
NEW YORK, Sept. 23—Two Curtiss racers, one entered by the Army and one by the Navy will be the principal contestants in the Pulitzer trophy race at Mitchell Field, L. I., on Oct. 10. The planes, which are exactly alike in design, are modeled after the 1923 Curtiss racers, but a number of improvements to increase their speed have been made. The new Curtiss V-1400 engines to be used in these planes have been fitted with high compression pistons so that they now develop 618 hp. Although developing about 120 hp. more, the new Curtiss engine actually weighs 30 lbs. less than the famous D-12, which was used by Lieut. A. J. Williams in the 1923 Curtiss racer, with which he established a speed record of 246.6 m.p.h. over a distance of 200 kilometers in the 1923 Pulitzer trophy race.

Tests of the latest planes at Mitchell Field the last week indicate that they are capable of attaining speeds of more than 300 m.p.h. Lieut. A. J. Williams will again pilot the Navy Curtiss racer this year, while Lieut. Cyrus Bettis will pilot the Army plane. Two other planes of the pursuit type have been entered by the Army and one pursuit plane has been entered, in addition, by the Navy for this race. They will be piloted by Lieut. Harvey W. Cook and Lieut. H. H. Dawson of the Army, and Lieut. Cuddihy of the Navy.

ROLLS-ROYCE LEFT-HAND DRIVE

SPRINGFIELD, MASS., Sept. 22—The Rolls-Royce Co. is making, in addition to the right-hand drive, a left-drive type of steering. This is especially adapted for the owner-driven type of car, while the left-drive steering has proved particularly desirable in the roadster, phaeton and inclosed drive type of cars.

August Production Shows Decrease



M. & A. M. A. Reports Big Business Ahead

Prosperity Foreseen for Automotive Parts and Accessory Industry

NEW YORK, Sept. 23—Business of automotive parts, accessories and service equipment manufacturers for the first nine months of the year ran approximately 30 per cent ahead of the 1924 period and is expected to continue in about the same ratio for the final quarter of the year, according to a survey just completed by the Motor and Accessory Manufacturers' Association. A large group of members, some selling their products to the car and truck manufacturers and others to the trade, reported an average gain for the first three-quarters of the year of 30 per cent over the same months of 1924 in the wholesale value of their sales. These companies reported expectations for the final quarter 31 per cent in excess of the last three months of 1924. The same companies operated their plants in August at an average of 80 per cent of capacity.

Index Figures Encouraging

August business of the parts and accessory industry, according to the M. & A. M. A., showed a very slight decline from July. With January shipments to customers as a basic figure of 100, August volume aggregated 153, as compared with 159 for July and 158 for June.

The index figure for shipments of motors, parts and accessories for original equipment on new cars and trucks was 161, as compared with 165 in July and 164 in June, while the peak month of the year was April, with an index figure of 183.

Replacement parts makers' shipments to the trade in August stood at an index figure of 130, as compared with 152 in July and 129 in June. The index for accessory shipments to the trade was

149 in August, and for service equipment business, 113. In the latter two divisions August shipments equalled those in July, but were below the June indexes of 172 in accessories and 159 in service equipment.

With car and truck production likely to show no more than a seasonal decline toward the end of the year, and with the heavy gains in motor vehicle registrations, enlarging demand for replacement parts and accessories, the industry, according to the M. & A. M. A., has reason to expect a continuance of prosperity throughout the year.

Yellow Trucks' Strong Financial Position

NEW YORK, Sept. 21—Final details of the merger of the Yellow Cab Manufacturing Co. with the truck division of the General Motors Corp. show that the new corporation, the Yellow Truck and Coach Manufacturing Co., has current assets of more than \$36,660,000, including \$5,600,000 cash on hand and liabilities of less than \$7,000,000.

John Hertz, chairman of the board, announced a stock dividend of 150,000 shares of 7 per cent preferred at \$100 par. Holders of the 600,000 shares of B stock of the Yellow Cab Manufacturing Co., as of record Oct. 2, will participate in the new issue at the rate of one share of preferred for every four of B securities.

Manufacture of heavy duty trucks and tractors will be started soon. At present the new corporation is manufacturing seven types of motor coaches, two of taxicabs, drivervulself cars and several one-ton truck models.

A new issue of 800,000 shares of \$10 par common was authorized for delivery to General Motors in payment for the assets transferred to the new company. Present preferred stock, 6750 shares of \$100 par, owned by the Chicago Yellow Taxi Co., will be retired at a price not stated.

American Victories in Russian Car Test

Competing Against Many Foreign Countries, Our Cars Make Excellent Showing

WASHINGTON, Sept. 22—Tests recently made by the Soviet Government, according to announcement here by the Russian Information Bureau, resulted in American automobiles showing up best and winning more prizes than those of any other country. American touring cars took seven of the fifteen prizes and American trucks took four of the five major prizes in the 3000-mile international motor trials, which covered a period of thirty days.

The principal makes of American, British, German, French, Italian and Austrian cars took part in the trials. The passenger cars covered 3000 miles, from Leningrad to the Black Sea and return to Moscow, and the trucks covered 1200 miles. Bad weather conditions were encountered during part of the test. The passenger cars were sent off in three groups, and prizes were awarded for each group. First prize for the best general performance, first group, Mercedes; second group, Buick; third group, Steyer. First prize for solidity and endurance, first group, Studebaker; second group, Buick; third group, Austrodamler. First prize for economy of operation, first group, Fiat; second group, Buick; third group, Praha. First prize for speed, first group, Mercedes; second group, Buick; third group, Austrodamler. Trucks, first prize for general performance, Mercedes; economy of operation, G. M. C.; passing ability, White; endurance and solidity, Pierce-Arrow.

Prizes awarded the American firms were accepted for them by the representative of the Amtorg Trading Corp., of 165 Broadway.

Sharp Decline in August Production

Department of Commerce Shows Decrease in Case of Trucks and Passenger Cars

WASHINGTON, Sept. 21—August production of motor vehicles, as announced by the Department of Commerce, was 221,756 passenger cars and 37,643 trucks, of which 214,326 passenger cars and 36,207 trucks were made in the United States, and 7,430 passenger cars and 1,436 trucks in Canada.

Production in both the United States and Canada showed a sharp decrease from July figures, this being accounted for almost entirely by the fact that Ford production in August was restricted by preparation for the improved models recently announced.

Passenger car production in the United States and Canada fell from 357,883 in July to 221,756 in August, and truck output decreased from 41,748 (revised figures) to 37,643.

The total of 214,326 passenger cars produced in the United States in August was 133,039 less than the revised total production in July, while Canadian passenger car production dropped 3,725.

The decrease in United States truck production was 3,761, and the Canadian decrease was 344.

The total of 391,302 passenger cars and 47,822 trucks produced in the United States and Canada in April is the monthly high for the year so far, each month since showing a decrease, except that July truck production gained over June.

In August, 1924, passenger car production in the United States and Canada increased to 255,232 over the July total of 244,544, and truck output increased from 26,391 to 28,647.

Total passenger car production in both countries for the first eight months of 1925 was 2,516,339 against 2,351,913 during the same period of 1924, while total truck output for this year so far has been 316,213 as compared with 257,462 for the same months last year.

Velie Adds New Model to Its Line

MOLINE, ILL., Sept. 19—A three-passenger coupe in two-tone blue Duco is the third new body type to be added to the Velie line in recent weeks. The list price of the new model is \$1,425.

The windshield is of one-piece ventilating design and the curved steel visor is integral with the roof. The top is of black leatherette and is fitted with lardau irons finished in the same color with nickel trimmings. Upholstery is blue leather, with headlining of matched broadcloth. The seat is 46 in. wide and the dimensions from seat back to floor board, and from seat to roof are 43 and 35½ in. respectively. Dura hardware is

used with four-turn regulators on doors and windows and an outside lock in the handle of the right door. Luggage space is provided in the rear deck and in a compartment back of the seat.

The finish is light blue below a ¾ in. black molding running from radiator shell to lower edge of car deck and above a similar molding which encompasses the body at the bottom of the superstructure. The intervening panel, top of cowl and hood is dark blue. Striping is in gold. Regular equipment includes cowl ventilator, automatic windshield wiper, rear vision mirror and transmission lock.

Glidden Tour to Include Toledo

TOLEDO, Sept. 21—Arrangements are being made for the Glidden tour of a fleet of about 20 aeroplanes to stop at Toledo, through Robert A. Stranahan, president of the Champion Spark Plug Co., leading Toledoan interested in the promotion of commercial aviation in this part of the country. The flyers will probably stop here October 3 at Heatherdowns, a large new subdivision, in which suitable acreage for landing is available.

A committee headed by Stranahan is purchasing an airport for Toledo and some of the Ford aviation engineers have been in Toledo to survey various sites selected by the committee. Stranahan purposes to purchase the field and develop it and later turn it over to the city when legal steps can be taken by the city to purchase such an airport.

Automobile Racing Headquarters Moved

WASHINGTON, Sept. 23—Hereafter official automobile racing in the United States will be directed from the national headquarters of the American Automobile Association here, it is announced by Ernest N. Smith, general manager of the national motoring body. The announcement was made coincident with the removal of the contest board of the A. A. A. from Franklin, Pa., to this city.

Richard Kennerdell of Franklin, Pa., will continue as chairman of the board and will spend much of his time here. The staff of the board, including P. C. Pommer, secretary, has already been installed at A. A. A. headquarters.

NEW MOTOR BUS LINE

CHICAGO, Sept. 23—Motor bus service between Milwaukee and Chicago has been started by the Chicago, North Shore & Milwaukee Railroad. For several years the North Shore has used motor buses as feeders for its electric railroad. By inaugurating a service in competition with its Chicago-Milwaukee trains, it is departing from its former policy, but, at the same time, is practically stifling competition from motor bus sources. Two buses each way, each day, constitute the service as now offered but definite running time for the ninety-odd miles has not been announced.

Chandler Announces Price Reductions

Many Detail Improvements Incorporated in Chassis—New Design Clutch

CLEVELAND, Sept. 22—Price reductions ranging from \$100 to \$505 have been made on the Chandler line and, at the same time, numerous detail improvements have been made in the chassis. The leader of the line is a five-passenger, four-door closed model, designated as the Twentieth Century sedan, which lists at \$1,490. The major cuts are on the closed models and the number of body types included in the line has been reduced from eleven to seven.

Revised Price List

The new and old prices follow:

	New Prices	Old Prices
Twentieth Century Sedan...	\$1,490	\$1,995
Metropolitan Sedan de Luxe	1,795	2,195
Seven-passenger Sedan.....	1,895	2,295
Brougham		
(Two-door, 5-pass.)...	1,695	2,045
Comrade Roadster	1,695	1,795
Sport Touring, 5-pass.....	1,495	1,595
Seven-passenger Touring....	1,595	1,735

Twentieth Century Sedan

The Twentieth Century sedan is finished in Duco, with the body panels in dustproof Buckingham gray and the superstructure in black. A ¾-in. bead goes around the body and hood. Upholstery is broadcloth, and regular equipment includes 33 x 6 in. balloon tires, VV one-piece windshield with wiper, rear vision mirror and smoking set. The gages and controls on the walnut-finished instrument board have been grouped in a symmetrical arrangement and indirect lighting is provided.

The brougham is done in sage-brush green Duco, the Metropolitan sedan de luxe in two-tone brown Duco, and the seven-passenger sedan in dark blue Duco. Upholstery in these models is mohair. Blue and buff with dark gray Spanish leather upholstery is used on the Comrade roadster. The two touring models are finished in gray-green Duco with black leather upholstery.

New Clutch Design

A new design of clutch is now used, in which the friction surfaces have been reduced from four to two and the clutch throwout rollers have been replaced with inserted steel blocks. These changes have made clutch operation easier, eliminating any rattling tendencies, and also have made it possible to shorten the transmission case by 1½ in. The latter advantage gives greater clearance in the driving compartment between the shifting lever and seat. A flexible coupling has been inserted in the steering column to prevent road shocks reaching the wheel. Changes have been made in the springs and a patented device on the spring shackles prevents rattles and has an automatic take-up feature.

Shenandoah's Crash Causes Are Studied

Ralph Upson Explains Disaster to
Airship from Engineering
Viewpoint

DETROIT, Sept. 21—Ralph Upson, chief engineer of the Aircraft Development Corp., in a special bulletin to stockholders, referring to the ill-fated Shenandoah, says in part:

"The recent loss of the U. S. naval airship Shenandoah has such direct bearing on our own development of metal-clad airships that all of our stockholders should be acquainted with the following facts:

"Briefly, the fabric-covered Shenandoah was destroyed by unusual stress of weather. The same cause has sent many a steamship to the bottom, but it is a cardinal principle of naval architecture to make a ship so strong that no stress of weather in the open can sink it. This ideal has been approached in steamship design mainly through use of metal construction.

"Two hours before the final accident the navigators' log stated the storm was the worst ever experienced. The principal direct causes of danger in such a situation may be listed as follows:

"1. Expansion of gas due to rapidly increasing altitude, tending to produce excessive pressures.

"2. (Alternative to No. 1). Contraction of gas due to rapidly decreasing altitude, tending to produce insufficient pressures.

"3. Structural bending moments produced by air forces on the outside.

"4. Weight and the inertia forces due to extreme angular movements.

Causes of the Accident

"It may be assumed that the Shenandoah had plenty of air openings into the hull, if they were properly used to take care of Item 2. Hence the analysis narrows down to Items 1, 3 and 4, all of which were probably effective in producing the result.

"In the first place, it must be understood that no mere wind velocity is any concern, except in its effect on the speed and direction of the ship. All three of the effects above considered are produced solely by rapid vertical currents and by sudden changes in wind velocity and direction. Properly to combat these effects requires certain definite characteristics of construction, which, in many respects, were conspicuously lacking in the Shenandoah. These criticisms, however, must not be understood as involving criticisms of the men who designed and built the ship. Her design for the most part is ten years old, and even at the time she was built (six years later) furnished almost the best that was available in the world. Most of the corrective measures here suggested are only possible as the result of development of the last few years.

"The most direct method of avoiding accident from Item 1 is adequate valve capacity. It would be very simple and involve little extra weight, to double or triple the valve capacity as used on the Shenandoah. There will be enough on the MC2 (our first metal-clad airship) to avoid all possible criticisms from this source.

"A second direct way of safeguarding against the same trouble is by increasing the permissible range of internal pressure. The safe pressure range in the Shenandoah lies only between zero and ten millimeters of water. This will be multiplied more than five times on the MC2.

"Although more indirect in its effect, probably the greatest single factor for combating turbulent air conditions is the stability and efficiency of control of the ship. The ideal is to have the ship so designed that it will respond instantly and just in proper degree to every gust which strikes it. The MC2, as shown by comparative wind tunnel tests, makes a close approach to this ideal, and is so much better than the Shenandoah in this respect that the improvement is almost revolutionary. This controls not only

(Continued on page 559)

Anti-Stalling Device for Planes a Success

NEW YORK, Sept. 23—An anti-stalling device for airplanes, the joint invention of Major Jack Savage of the Sky Writing Corp. and M. Louis Bramson, a French airplane engineer, was successfully demonstrated at Curtiss and Mitchel Fields yesterday afternoon in the presence of aviation experts and officers of the United States Army Air Service. The device operates automatically, so that when the nose of an airplane is pointed at such an angle that the engine stalls and the machine is in danger of coming down in a tail spin, pressure is exerted on the control stick so that the plane is righted.

The demonstration was made by Capt. C. B. D. Collier, flying an SE-5 plane. Several times he flew over the army officers with his motor cut off and his hands raised above his head while the anti-staller brought the plane to an even keel.

Major John D. Brooks, executive officer at Mitchel Field, said the device operated perfectly and should be of great value on training planes where the danger of a recruit pilot stalling his machine is greatest.

CHEVROLET PRODUCTION

NEW YORK, Sept. 24—The Chevrolet Motor Co. has added another record to the series of sales and production marks established this year, according to announcement made today. The new record is represented by deliveries to Chevrolet dealers in August, which totaled 41,500, a larger number of cars than the company has ever placed with its dealers in any preceding August. August deliveries also exceeded those made in June or July of this year.

Higher Price Groups Gain in Car Sales

At Same Time Lower Price Models
Fall Off in N. Y. Territory

NEW YORK, Sept. 23—While August sales of 1925 models of medium and lower priced passenger automobiles in the metropolitan territory, covering ten counties, decreased 2631 from the July total, sales of 1925 models of higher priced passenger cars increased 14.

This is the chief feature of the August automobile sales analysis made by Sherlock & Arnold, publishers, 296 East Nineteenth Street, New York City.

Medium and lower priced car sales decreased from 11,151 in July to 8520 in August, while higher priced car sales increased from 825 to 839.

April is the high month so far, the medium and lower priced group reaching 11,301 sales in that month and the higher priced 1079. For the first eight months of this year the former group shows total sales of 66,392 and the latter 6296, compared with 67,513 for the medium and lower priced cars in the same period of 1924, and 4857 for the higher priced passenger vehicles in that period.

New Model Is Added to the Oakland Line

PONTIAC, MICH., Sept. 21—A new two-passenger roadster, listing at \$975, has been added to the latest Oakland line, it was announced today by the Oakland Motor Car Co. Wheels, hood and body are finished in two-tone Duco of a pyramid gray color, with a darker shade of gray above the beading, which extends from the radiator back along the rear deck. Red striping on the body, louvres and wheels contrasts with the general color scheme. Genuine leather is employed for the upholstery. Special features include a one-piece windshield and collapsible top.

NEW TIRE COMPANY FORMED

LOUISVILLE, KY., Sept. 23—Organization of the Parkland Tire & Rubber Co. for the manufacture of balloon and high pressure automobile tires has been announced by officials of the new concern. According to the announcement, the company has purchased a plant, consisting of a group of several buildings. At one time the plant was the home of the Ten Broeck Tyre Co., which was liquidated several years ago and replaced in the same building by the Cumberland Tire & Rubber Co. The plant was last operated by the Bartling Tire Co.

Henry W. Lamorde is president of the new concern; John D. Cary, vice-president; A. F. Faure, secretary and treasurer, and Herbert W. Lantz, factory manager.

Airplane Experts to Discuss Problems

National Aeronautical Meeting to Be Held by S. A. E. Before Air Races

NEW YORK, Sept. 23—Experts are to present the latest available information on airplane design, construction and operation, in a number of addresses to be delivered at the National Aeronautical meeting and dinner to be held by the Society of Automotive Engineers at the Hotel Astor, New York, on the afternoon and evening of Oct. 7, the day preceding the Pulitzer prize races at Mitchel Field, L. I.

The afternoon session is to be devoted to papers and discussion on the design and construction of racing and commercial planes and engines, and the evening session, following the aeronautic dinner, to the operation of aircraft in commercial air lines. The speaker at the dinner is to be C. M. Keys, president of the Curtiss Airplane & Motor Co., whose new racing plane was recently flown 1 km. at the rate of 302 m.p.h. Harry L. Horning, president of the society, will preside and Henry M. Crane, of General Motors Co. and past president of the society, will be toastmaster.

The president of the Aero Club de France, P. E. Flandin, and Louis Breguet, a prominent French airplane manufacturer, have accepted invitations to attend the sessions and the dinner. The meeting is open to all persons seriously interested in aeronautics. The papers to be delivered, and their authors, are as follows:

The Aeronautical Safety Code, Its Object and Meaning, by Henry M. Crane, General Motors Co.

Evolutions of the Racing Plane, by W. L. Gilmore, Curtiss Airplane & Motor Co.

Some Aspects of Aircraft Engine Development, by George J. Mead, Pratt & Whitney Aircraft Co.

The Light Airplane and Low Powered Flying, by W. Lawrence Le Page, Gardner Pub. Co.

Operation Facts from the Air Mail Service, by J. C. Whitbeck, Air Mail Service, P. O. Dept.

Operation Lessons from the Ford Air Lines, by W. B. Stout, Stout Metal Airplane Co., Air Line Division, Ford Motor Co.

Reliability in Operation, by Lieut. J. Parker Van Zandt, Department of Commerce.

Studies Commercial

Aviation on Coast

LOS ANGELES, Sept. 23—A study of the possibilities of commercial aviation on the Pacific Coast is being personally conducted by W. B. Stout, head of the airplane department of the Ford Motor Co.

"Facilities for carrying on air naviga-

tion should be furnished by the Government the same as they are for navigation by water," he declared. "No doubt a bureau of aviation will be created by the Government in due time. In fact, measures with that end in view probably will be introduced at the next session of Congress."

Stout added that the only danger in aviation lies in unreliable engines. In the Liberty motor, he said, the United States has an engine far superior to that of any other country in the world, but it is constantly being perfected and eventually "we will have motors that will meet every possible demand." In this connection, he compared American airplane construction with that of Europe, asserting that every item of equipment in American-made planes is superior to European construction.

Shenandoah's Crash Causes Are Studied

(Continued from page 558)

Item 1 but also each of the others. At the same time, the comparatively short and compact shape of the MC2 (only one-third of the length-to-diameter ratio of the Shenandoah) is a great help in the more even distribution of gusts, reducing the bending moments so caused, and giving greater strength to withstand them.

"Another indirect factor affecting the control is the character of the covering. At the time the Shenandoah broke away from her mast last year, the immediate cause was the tearing away of the fabric from one of the fins. It seems quite probable that this also occurred in the present case, thereby magnifying still more the original instability of the ship. The tearing of the fabric on the hull might also have had a serious effect. Fabric covering is done away with in the metal-clad MC2, and the metal which takes its place is an integral part of the hull itself, stiffened against vibration by its double curvature and a positive gas pressure behind it.

"Coming to the subject of structural strength, the principal requirement is to have a factor of safety adequate to cover various unforeseen conditions. In spite of the other defects in the Shenandoah above mentioned, it has a factor of safety at many points of only about two, that is, it was built about twice as strong as theoretically necessary to resist the expected worst operating conditions. This factor in the MC2 will be nowhere less than three, and at all important points at least four. This is done without adding excessive weight, simply by reason of the more economical distribution of material.

"The breaking away of the control car which caused nearly all of the fatalities, was probably due to the fact that it was hung separately below the main body of the hull, and hence in a position to be easily broken off by the extreme angles and accelerations with which she met. The MC2 has an all-metal car which is a structural unit with the metal-clad hull.

"(Signed) RALPH H. UPSON."

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co., second largest bank in America.

NEW YORK, Sept. 23.—The call loan rate on the New York Stock Exchange advanced on Sept. 21 to 6 per cent, the highest point reached since 1923, except for a temporary bulge near the end of last June. Trade and industry continue to report expanding activity. Commodity prices in general moved upward last week. Stock quotations also advanced in very active trading.

Employment in manufacturing industries rose 0.8 per cent in August, while aggregate earnings of employees increased 1.8 per cent, and per capita earnings 0.9 per cent. Nearly all groups of industries shared in the gain, with the leather industry leading.

Car loadings in the week ended September 5 numbered 1,102,946, comparing with 1,124,436 in the preceding week and 920,979 in the corresponding period last year (a holiday week). This was the first time in nine weeks that loadings failed to increase.

The preliminary report shows exports last month amounting to \$383,000,000, the largest total since April. Imports, amounting to \$375,000,000, were the largest since March. Both imports and exports exceeded all other August figures since 1920. Last month's gold movement was small.

Grain exports last week reached a total of 6,337,000 bushels, the largest figure recorded since early in May. Exports the third week in September a year ago were 11,073,000 bushels.

Bank debits to individual accounts reported to the Federal Reserve Board for the week ended Sept. 16 were 39.9 per cent larger than those for the preceding week (a holiday week), and 17.6 per cent above those for the corresponding period last year.

Fisher's index of wholesale commodity prices stood at 159.0 last week, as against 158.1 in the preceding week and 158.7 four weeks earlier. The wholesale price index of the Department of Labor for August is 160.4, as compared with 159.9 in July.

Earning assets of the Federal Reserve banks declined \$71,200,000 during the week ended September 16, with declines of \$151,300,000 in discounts and \$2,200,000 in open market purchases, and an increase of \$82,100,000 in Government securities. Note circulation declined \$2,800,000 and total deposits \$14,300,000, while total reserves increased \$800,000. The reserve ratio rose from 73.4 to 73.7 per cent.

Time loan and commercial paper rates were unchanged last week at 4½ to 4¾ per cent and 4¼ to 4½ per cent, respectively.

N.B.M.A. Discuss Problems of Trade

Battery Makers Accept Rating Committee Chairmen Report —Banquet Held

NEW YORK, Sept. 21—Cooperation was the keynote of the meeting held by the National Battery Manufacturers Association at Hotel Roosevelt Friday and Saturday. Enthusiasm marked the sessions, new members were admitted and other steps were taken to increase the efficiency of the organization. About sixty members attended and the convention was the best ever held by the association.

The proposed rating of the Society of Automotive Engineers was adopted for automobile batteries as standard for the association members. Radio battery ratings were also adopted. The first includes a continuous discharge of one ampere starting with specific gravity of 1.285 and temperature of 80 deg. Fahr., continuing the discharge until the voltage has dropped to 1.75 volts per cell.

The other rating contemplates discharge of one-fourth ampere per positive plate, continuing the discharge for four hours and then cutting off the current for twenty hours, discharging four hours more, followed by a rest period of twenty hours and so on until the voltage has dropped to 1.75 volts per cell.

Insurance Plan Suggested

Dan H. Kelly, of the U. S. Light and Heat Corp., and president of the association, presided. One of the most interesting discussions was that by A. G. Hancock of the Home Insurance Co., who described a new insurance policy for rented and loaned batteries. This policy, offered at a low rate, covers fire, theft, loss and lightning casualty on land or water. Although no official action was taken on this subject, it aroused keen interest among the manufacturers and was offered for their consideration in connection with their own service stations.

The necessity of gathering and formulating statistics for the industry was pointed out by Commissioner O. B. Towne and it was voted to start in a small way to collect statistics on certain agreed-upon items, to provide a more accurate understanding of the actual condition of stocks on hand, number of batteries manufactured, the number sold, etc.

Federal Excise Tax a Burden

Alfred Reeves, secretary of the N. A. C. C., discussed the Federal excise tax on automobiles, particularly from the standpoint of the parts and battery manufacturer. This address voiced the attitude of all manufacturers present to the effect that this tax adds a burden to buyers of cars and parts. Arrangements are being made to have a representative

of the association in Washington when this subject comes before the taxation committees of Congress.

New members admitted were: Westinghouse Electric and Manufacturing Co., Lyons Storage Battery Co., W. F. Price Battery Supply Co., and Pioneer Storage Battery Co.

Committee Chairmen Report

A committee was appointed to study the matter of creating a credit department and these committee chairmen reported: J. B. Perlman, cooperative advertising; H. A. Harvey, advertising and publicity; H. H. Brenner, code of ethics; R. H. Van Nest, dealer cooperation; T. A. Bartlett, membership committee; R. D. Mowry, sectional meetings, charge for service and standard guarantee; W. J. Sandman, uniform cost system.

Mr. Harvey discussed the B battery booklet and Mr. Mowry reviewed the lead situation, while Mr. Perlman made an address on the subject of misbranding products. H. Deuster, of the Motor and Accessory Manufacturers Association, discussed recent changes in shipping specifications for shipping charged batteries by freight.

The banquet on Friday night was tendered to the association with the compliments of Automotive Electricity, Eagle-Picher Lead Co., Hartford Battery Co., Work Storage Battery Co. and Witherbee Battery Co.

The next meeting will be held in Chicago during the Chicago automobile show.

Bus Plan to Save Railroads Money

FRAMINGHAM, MASS., Sept. 19—If the project proposed by the New York, New Haven & Hartford Railroad is carried out along the lines contemplated by substituting buses for trains, it will mean wiping out miles of service to the south of this city by trains to New Bedford, and to the north to Lowell and Fitchburg, as well as ending the twenty-five years' controversy over elimination of grade crossings that would represent a cost of some \$5,000,000 to the railroads using this place. A petition for the first bus line has been entered, with others to follow. It is planned to make Framingham a distributing point for transfer of freight by trucks to various other points.

Plant Removal

WAYNE, IND., Sept. 22—Immediate removal of the Steel Clad Auto Bow from Holland, Mich., to Wayne has been announced by Douglas Sinclair, secretary of the firm. The company has purchased the defunct Wayne Bow Co. and will begin the installation of equipment at once so that production may be started by Oct. 1.

Removal of the firm was made necessary, according to Mr. Sinclair, in order that the plant would be closer to its market in Detroit.

FINANCIAL NOTES

Wickwire Spencer Steel Corp.—The definitive prior lien collateral and refunding mortgage 7 per cent convertible sinking fund gold bonds, Series A, of this company, Wickwire Spencer Steel Co., the new company, organized under the plan for the reorganization of Wickwire Spencer Steel Corp., dated Aug. 4, 1924, are ready for delivery at the offices of the following depositaries: The Guaranty Trust Co. of N. Y., The Marine Trust Co. of Buffalo, The Fidelity Trust Co. of Buffalo, The First National Bank of Boston, Illinois Merchants Trust Co. of Chicago, and The First National Bank of San Francisco. Permission has been obtained from the Governing Committee of the New York Stock Exchange to list the new bonds.

Goodyear Tire & Rubber Co. of California—This company has declared a dividend of \$1.75 on account of \$19.25 accumulation on the preferred; also the regular quarterly dividend of \$1.75 on the preferred, both payable Oct. 15, to holders of record of Oct. 1. Directors of the company have authorized the construction of \$1,000,000 addition to its Los Angeles plant. The company is now turning out 7000 tires daily, and 10,000 inner tubes. It has 3000 employees, and, upon completion of the new addition, will have a total of 1,000,000 square feet of floor space and will employ 4,000 persons.

Electric Auto-Light Co.—This company reports for August, 1925, net profits of \$247,798, after depreciation, as compared with \$141,430 in the preceding month, and \$76,185 in August, 1924. Net profits for the first eight months of 1925 were \$1,807,145, which, after allowing for Federal taxes, were equal to \$6.32 a share on the 250,000 common shares, as compared with \$3.78 in the corresponding period of 1924. The balance sheet as of Aug. 31, 1925, shows a ratio of current assets to current liabilities of more than six to one. Net tangible assets totaled \$6,996,645.

Willys-Overland Co.—“The preferred dividend declared by the Willys-Overland Co. technically covers the second quarter of 1921, which is the first of the cumulative dividends due on the preferred stock,” John N. Willys, president of the company, says. “This action is in line with our policy of paying sufficient dividends to prevent an increase in the amount of cumulative dividends, which total 29¾ per cent.”

Fageol Motors Co.—President L. B. Hill reports net profit for eight months ended Aug. 31 as \$306,771, equal, after preferred dividends, to \$1.34 a share on 198,696 shares of common. He said book value of \$10 par common is \$225 a share, after allowing for outstanding preferred. The company has 83,122 shares of \$10 par preferred.

Aero Supply Mfg. Co.—It is announced that the directors of this company had declared an initial dividend of 37½ cents a share on the Class “A” stock, payable Oct. 1, to holders of record of Sept. 21.

McCord Radiator & Mfg. Co.—The New York Curb Exchange has listed voting trust certificates of this company, representing 150,000 outstanding shares Class B Stock, no par value.

Men of the Industry and What They Are Doing

Anderson Awarded Medal

The American Foundrymen's Association announced the award of the William H. McFadden Gold Medal of the association to Robert J. Anderson, the noted aluminum expert and metallurgical engineer. The formal award will be made on Thursday, Oct. 9, at Syracuse, N. Y., in connection with the fall meeting of the association. The selection of Dr. Anderson by the board of awards to be recipient of the medal is in recognition of his notable and distinguished achievements in the non-ferrous casting industry and for his many scientific contributions to the metallurgy of aluminum. He is well known in automotive circles and has been retained as consulting metallurgical engineer by the Kant-Skore Piston Co.

Lawson Sells to N. Y., N. H. & H.

Arnold Lawson, son of the late Thomas W. Lawson, well known financier, has joined the New York, New Haven & Hartford Railroad as superintendent of the Eastern lines of the newly organized New England Transportation Co., a million dollar subsidy of the railroad operating the bus lines of the company. Mr. Lawson had been running the Dreamworld Motor Coach line coaches from Boston to Newport, via Providence.

Burr Appointed

The Houde Engineering Corp., Buffalo, N. Y., manufacturers of Houdaille (Hoo-Dye) hydraulic shock absorbers, announces the appointment of H. B. Burr as manager of factory equipment and manager of Detroit factory branch. Mr. Burr was formerly with the Remy and Klaxon divisions of General Motors.

Reading Road Protests Grant of Bus Licenses

HARRISBURG, PA., Sept. 23—An application to the Public Service Commission for a certificate of public convenience to operate a motor bus line from Pottsville to Lykens, Pa., has aroused the Reading Railroad Co. to protest against the granting of it until the company shall have the opportunity to study the inauguration of an extensive motor bus service itself. The company has further asked that no bus line applications in competitive territory be granted for three months, assigning as the reason diminishing revenue from local passenger traffic, due to the increasing competition of individual bus lines and the inability of the railroads to compete with the automobile. E. D. Osterhout, passenger traffic manager of the road, appeared before the commission and stated these facts, adding that the Reading is the first railroad in Pennsylvania to take steps to enter the motor bus business.

Rubber Executives Abroad

Among rubber company executives in Europe are E. G. Wilmer and P. W. Litchfield, chairman of the board and vice-president respectively of the Good-year Tire & Rubber Co., and G. Work, president of the B. F. Goodrich Co. Messrs. Wilmer and Litchfield are on business in Germany, giving special attention to aeronautical developments. Mr. Work is visiting Goodrich subsidiaries in France.

Zellor with Moon

Carl L. Zellor, known along motor row in Kansas City for twelve years, has been appointed zone manager for Moon Motor Co. in Kansas City, and has already enlisted ten dealers. He was formerly with Tri-State Motor Co.

Study Conditions on Tour

R. S. Lane, president of United Motors Service, and D. M. Sweeney, field supervisor, are making a tour of western Canada and that part of the United States west of the Mississippi River to obtain first hand knowledge of conditions in those sections.

Graf Made Chief Engineer

Andrew Graf, formerly assistant chief engineer of the United States Motor Truck Co., has been appointed chief engineer of that company. He succeeds E. C. Shumard.

Roberts Joins Miller Rubber

Arthur O. Roberts, at one time assistant advertising manager of the Velie Motors Corp., has joined the advertising staff of the Miller Rubber Co.

BELGIANS TO COME HERE

BRUSSELS, BELGIUM, Sept. 22—An official delegation of the Belgian Chamber of Manufacturers will pay a visit to the United States next October. The delegation comprises Victor Charlet, vice-president of the Chamber, a manufacturer of springs and axles; Mr. de Wolf, a prominent coach builder, and Mr. Delaunay, technical manager of the motor car factory "Metallurgique." The object of their visit is to buy machines and to visit the principal motor car works here, spending a fortnight in Detroit.

C., R. I. & P. BUYS GASOLINE CAR

CHICAGO, Sept. 23—The Chicago, Rock Island & Pacific Railway Co. has purchased from Mack Trucks, Inc., a gasoline motor car embodying the latest features in economical local passenger transportation. It was said that this car would soon be in operation on the Missouri division between St. Joseph and Altamont, taking the place of a two-car steam train.

On Eastern Business Trip

Norman de Vaux, active head of the Durant and Star organizations on the Pacific Slope, and James Houlihan, advertising counsel to these corporations, left the middle of September for an extensive business trip through the East. They go first to the headquarters of Durant Motors, Inc., in New York for conferences with officials of the company. They will then tour the Durant plants, and Houlihan will make an industrial survey of Detroit, making his headquarters with the Continental Motor Co. De Vaux plans to go to Flint, Mich., for a brief visit with his former sales manager, R. H. Mulch, who is now vice-president and general manager of the Flint Motor Co.

Norton Leaves G. M. T. C.

S. V. Norton will resign on Oct. 1 from the position of service manager of the General Motors Truck Co. at Pontiac.

For fifteen years prior to his connection with the truck division of General Motors, Mr. Norton was with the B. F. Goodrich Rubber Co., Akron.

Make Tour of Coast

Ralph S. Lane, president, and D. M. Sweeney, field supervisor of United Motors Service, are on tour of the Pacific slope, having spent several days in September in Oakland, Cal. Expansion of service stations throughout the country is being arranged, according to Lane.

Lawson to Bendix Brake

O. T. Lawson, formerly of the Trip-pensee Closed Body Corp. of Detroit, has resigned as purchasing agent and has entered the employ of the Bendix Brake Co., South Bend, Ind., in a like capacity.

NEW GARAGE PLANNED

NEW YORK, Sept. 22—Arthur Brisbane, the editorial writer, will begin shortly the construction of a 750-car garage, employing d'Humy motorramps, on a plot, 100 x 200 ft., located on 102nd Street just off Fifth Avenue. The new garage will serve the needs of car owners residing in nearby apartments, and will be operated by the Fifth Avenue and 102nd Street Garage Corp. under the name of the Brisbane 5th Ave. Garage.

MEETING DATE SET

GRAND RAPIDS, Sept. 22 — The Michigan Engineering Society has arranged its annual convention to take place here Oct. 28 and 29. The dates were set to enable the members to attend the first annual Good Road Show of the Michigan Association of Road Commissioners and Engineers.

Oakland's August Sales Show Gain

PONTIAC, MICH., Sept. 23—August sales of Oakland passenger cars were the best of any month this year and the greatest in the history of the company. The best previous August was exceeded 34 per cent. The demand for the new models has caused the factory to speed up production, making it likely that the output for the remainder of the year will be near capacity.

According to W. R. Tracy, assistant director of sales, the more uniform division of deliveries between the four closed body types and the general uniformity of sales according to population throughout the country are two of the notable facts that mark the increase in sales.

British 20-Passenger Airplane

LONDON, ENGLAND, Sept. 13 (by mail)—It has been announced that Imperial Airways, the concern having the monopoly of passenger airplane services

in England, so far as Government recognition by way of subsidy is concerned, is about to receive from the Air Ministry, in order to test its commercial possibilities, the new Vickers Vanguard twin-engine passenger machine, claimed to be the largest passenger airplane in the world. This machine accommodates twenty passengers, with a pilot and mechanic, and also has room for a small buffet in the cabin. It has the oval fuselage characteristic of all the large Vickers machines, and is a development of the commercial Vimy. Driven by two Rolls-Royce Condor engines, each of 650 hp., placed on the wings, it combines a high degree of comfort in the long cabin, with a useful load of about two tons. Its cruising speed is given as 100 miles an hour.

It was originally designed to take two Napier Lion engines of 450 hp., but with the production of the higher-powered Rolls-Royce Condor engine, the substitution was made to increase its performance. It has a span of more than 87 ft., a length of 60 ft., and a maximum speed of 115 miles an hour.

Bosch Magneto Plan to Increase Stock

NEW YORK, Sept. 22—Directors of the American Bosch Magneto Co. have called a special meeting of stockholders for Oct. 13, at which they will be asked to approve an increase in the capital stock from 175,000 to 250,000 shares. The management intends to offer 69,133 shares of the new stock to shareholders on the basis of one share of new stock for every two shares held, at a price of \$33. The company has made no arrangements for underwriting.

The sale of stock, if accepted by stockholders, will provide the company with \$2,200,000 cash, which will be used to retire \$2,125,000 outstanding 8 per cent notes, which are callable at 105. Because of the provisions of the indenture securing the notes, no dividends can be paid on the capital stock except when current assets more than double current liabilities. The retirement of the notes is looked upon, therefore, as foreshadowing a resumption of dividend payments.

Developments of the Week in Leading Motor Stocks

NEW YORK, Sept. 23—The credit situation assumed a dominant place in the stock market of the week. The advance in call money to 6 per cent; a distinctly firmer tone in the rates for time accommodation and a rise in the rate for acceptances all point to the growing requirements of business, with the consequent necessary readjustment of the collateral loans held by banks. In the early days of this week, this situation was reflected in a sharp decline in stock prices, but with contrary movements in the shares of companies identified with the automotive industry.

Bankers do not hesitate to say that too much money is going into non-productive enterprises, as witnessed by the Nation-wide land speculation, and that too great a percentage of future earnings is being mortgaged through partial payment plans for the purchase of luxuries. At the moment it would seem that the collateral loan item in the bank statements at Chicago, Cleveland, Boston and New York must be readjusted to provide the sinews of war for commerce and industry. This readjustment is expected to result in irregularity in stock prices in the immediate future.

The financial district wanders each day through a maze of rumors and conjectures regarding automobile stocks. Reports of mergers and of buying for control by rival interests are interspersed with earnings statements, and each of these is a factor in the price fluctuations of individual securities. That none of the consolidations or readjustments which were to be made public on a given date has been announced in nowise dampens the ardor of the speculative fraternity.

The spectacular movement of the week was furnished by Hudson Motors, which in a short two-hour session advanced some twelve points. The advance coincided with the report for the third quarter of its fiscal year showing net earnings of \$6,926,554, equal to something more than \$5 per share, and, for the first nine months, \$16,722,260, or \$12.66 per share on the 1,320,050 shares outstanding. Thus, the results for nine months have been more than double the per share earnings for the entire preceding fiscal year. Publication of these figures started a stampede of shorts, and the urgent demand continued into the early days of the current week to the reiteration of the report that Ford Motor Car Co. interests were seeking control, through buying in the open market here by banking firms. How much of this is truth and how much speculative conjecture only the bankers themselves can say, for the Ford company has officially denied its part in the alleged transaction.

There was nothing new to account for the continued advance in the price of General Motors, which soared to a new high record for the present stock. It is probable that a larger percentage of real investment buying has occurred in this stock than in any other motor issue. The sound financial position of the company, its position in the industry, and its powerful financial sponsorship have led many persons who believe that an era of consolidations has arrived, to buy the stock in the assurance that it represents real value and an unquestioned trade position in the future, regardless of developments in other companies.

For the strength in Packard Motor Car stock there have persisted reports,

first, that the stock would be placed on a regular \$2 annual dividend basis, and, second, that either a 25 or 50 per cent stock dividend would be declared. This latter report persisted, despite the statement of President Macauley that "nothing unusual is planned at this time."

A flurry in American Bosch Magneto preceded announcement that the company is planning to issue 69,133 shares of additional stock at \$33 per share in the ratio of one new share for each two old shares now held. A special meeting of the stockholders has been called for October 13 to vote on the proposal.

A development of interest during the week was the announcement of the details of the merger of the Yellow Cab Manufacturing Co. of Chicago and the truck division of the General Motors Corp. A stock dividend of \$15,000,000 in 150,000 shares of 7 per cent preferred will be distributed among holders of the 600,000 shares of Class B stock, of record October 2, on the basis of one share of preferred for every four shares of B stock held. A new issue of 800,000 shares of \$10 par common stock was authorized to be given the General Motors Corp. in payment for the assets transferred to the new company. The present 6,750 shares of \$100 par value preferred stock owned by the Chicago Yellow Taxi Co. will be retired at a price not stated.

Stewart-Warner advanced to a new high for the movement on reports of an increase in the dividend rate to be made before the end of the year; Hupp Motors was active on report of large earnings and merger reports were responsible for most of the activity shown elsewhere in this group.—H. H. S.

Elimination of War Excise Taxes Sought

Automotive Interests Meet to Prepare Campaign in Next Congress

WASHINGTON, Sept. 23—Representatives of all automotive interests marshaled their forces here this week at a meeting held in the offices of the National Automobile Chamber of Commerce to launch a winning fight in the Sixty-ninth Congress for the elimination of all war excise taxes, which include those on motor vehicles, parts, tires and accessories. Decision was reached that each automotive group should work out its own line of action, with specific attention to the particular phases affecting it.

Congressmen Think Request Fair

Those present reported that they were gratified to learn through conversations in the last few months with members of Congress that there is general appreciation on the latter's part of the justice of the demands of the automotive industry.

It was reported at the meeting that representatives of all of the automotive groups have requested time, when the House Ways and Means Committee meets next month, which no doubt will be granted.

Those present at the meeting included George M. Graham, director National Automobile Chamber of Commerce; C. P. Clark, acting general manager of the American Automobile Association; S. M. Jett, Rubber Association of America, Inc.; Walter B. Guy, National Automobile Dealers' Association; C. E. Quinn, Automobile Body Builders Association; M. L. Heminway, Motor and Accessory Manufacturers' Association; W. W. Cloud, National Association of Taxicab Owners; B. W. Ruark, Automotive Equipment Association and Automotive Manufacturers' Association; A. T. Waterfall of Dodge Brothers, Inc., and W. H. Brearley of the Auto Car Co.

Morris Here to Study Our Production Methods

DETROIT, Sept. 22—W. R. Morris, governing director and owner of Morris Motors, Ltd., of Oxford, Coventry and Birmingham, England, has been spending a week in Detroit to study American production methods. While here Mr. Morris confirmed the announcement of the purchase by him of the Leon Bollee Co., manufacturers of the Bollee car at Le Mans, France. This company has been a moderate producer of a high-grade French car for many years, and Mr. Morris announced his intention of introducing modern American production methods in the French factory to increase production.

Mr. Morris stated that his company in England has just finished its fiscal

year with a production of 50,000 cars. This is ten times more than any other manufacturer in England.

When seen at the Continental Motors Corp. he said, "My visit to America has no particular significance except that I am desirous of learning all I can about new automotive production methods. My stay at the Continental Motors Corp. plant has been very instructive and I intend installing a number of their methods in our plants in England and France."

When asked about the possibilities of the little "bug" type of car, so prevalent in England, for use in America, Mr. Morris said, "I believe there is a very great potential market for the small car in America, and I am surprised that some one of your great manufacturers has not seen the situation before this. With your excellent paved roads and the congestion of your streets it would seem to me that a little light car would be most efficient."

Caillaux Asked to Visit Motor Plants

TOLEDO, OHIO, Sept. 22—Joseph Caillaux, French Minister of Finance, and the delegation of French financial experts who have come to the United States to discuss the French war debt have been invited by John N. Willys, chairman of the foreign relations committee of the United States Chamber of Commerce, to visit automobile plants in Toledo and Detroit.

"We of the automobile industry," says Mr. Willys, "realize the serious and important responsibility of individual transportation in promoting a warmer relationship and a closer understanding among peoples in all countries. We will use every opportunity to advance official cooperation."

Uruguayan Tariff on Automobiles Increased

WASHINGTON, Sept. 19—On Aug. 20, an additional 5 per cent of the valuation was added to the existing Uruguayan duty of 24 per cent on automobiles, which has been in effect for some time, according to a cable received from Acting Commercial Attache L. B. Clark at Montevideo.

The duty of 31 per cent of the valuation on motor cycles, parts and accessories and other automotive products remains unchanged.

The schedule of valuations which became effective Jan. 29, 1924, for automotive products is in great detail, giving the legal value for each model of the various makes. The Automotive Foreign Trade Manual contains the legal value of parts and accessories, and sheets from this publication, as well as the legal valuation of any specific make and model of passenger car and truck, may be obtained upon request from the Division of Foreign Tariffs of the Bureau of Foreign and Domestic Commerce.

Foreign Trade Will Be N.A.C.C. Topic

Show Drawings Also to Be Made at Fall Meeting in New York City

NEW YORK, Sept. 23—Looking forward to 1926 as a new era in the export of American cars and trucks, the National Automobile Chamber of Commerce will have foreign trade as the chief topic of its annual fall meeting at its New York offices on Oct. 8. Drawing for space in the National Automobile Shows at New York and Chicago will be held in the afternoon.

"We are trying to work for better motor travel conditions throughout the world," said John N. Willys, chairman of the Foreign Trade Committee. "We want the foreign makers to get their share of the market. There is plenty of room for all. The problem is not what makes of cars will be sold, but rather how to improve roads, lower taxes, provide financing and get uniform regulations."

Preliminary details of the second World Motor Transport Congress, New York, Jan. 11-13, will be arranged at this meeting.

Repeal of the Federal excise tax on motor vehicles will be the chief subject of discussion by the commercial vehicle manufacturers.

BRITISH PLANT FOR CITROEN

LONDON, ENGLAND, Sept. 13 (By Mail)—Citroen cars for the British market are to be made at a plant consisting of a portion of the motor transport depot erected during the war by the government at Slough, about 25 miles from London. This depot and the surplus vehicles there were bought by the Slough Trading Co. shortly after the war; it has been split up and sold subsequently for various purposes.

This move on the part of Citroen was foreshadowed two years ago, but the removal of the import duty in the summer of 1924 rendered it unnecessary. The re-imposition of the duty has brought the project to a head. At first the new plant will be used for assembling French parts, but it is understood that before very long all components will be produced at Slough, probably for cars for export to British colonies as well as for the English market.

New British prices and mechanical changes are also the subject of a Citroen announcement to-day. The smaller model—the 7-5 hp.—is practically unchanged in either respect, the cheapest model still being the clover-leaf at £145. The 11-4 hp., with British body, has been reduced in price, an example being the four-passenger, which has been cut from £235 to £210. Mechanical variations in the chassis include aluminum pistons, larger brakes and a stouter crankshaft. No mention is made of four-wheel braking.

Jordan Brings Out New Small Eight

Roadster and Sedan Possess Improvements Over Former Models

CLEVELAND, Sept. 21—An additional eight-in-line model designated by the letter J and similar to Model A in general mechanical design, but smaller in dimensions, has been announced by the Jordan Motor Car Co., Inc. The engine is of $\frac{1}{8}$ in. less bore than that of Model A, namely, $2\frac{3}{4}$ in., but of the same stroke, $4\frac{1}{4}$ in., and is said to develop 64 hp. at 3,000 r.p.m. A feature of the new engine, which was introduced on the larger engine some time ago, consists of a valve for draining the crankcase of oil, which can be operated by merely pressing on a plunger located conveniently alongside the upper part of the crankcase. A vibration damper is fitted to the forward end of the crankshaft outside the crankcase.

Among the other major units of the new chassis are a Long clutch, Warner transmission, Timken front and rear axles, Gemmer Model 80 worm and sector type steering gear, Parish & Bingham frame and Lockheed hydraulic four-wheel brakes. The springs are of Mather make and comprise only leaves of chrome vanadium steel. Chassis lubrication is by the Alemite system.

The new car is to be made in a roadster and a sedan model, both of 116 in. wheelbase, the price of the open car being \$1695 and that of the closed model \$1845. Both models are fitted with patented all steel bodies built by the Edward G. Budd Co. of Philadelphia.

Artillery type wood wheels with twelve spokes each are standard equipment, as are 30 by 6 in. balloon tires mounted on Firestone six lug straight side detachable rims. All trimming and painting of the two models of all-steel body is now being done by the Jordan company itself, a new six-story factory building having been acquired recently.

Changes in Marmon Feature New Model

INDIANAPOLIS, Sept. 21—In the Marmon 74, just announced by the Nordyke & Marmon Co., three important changes have been made in the equipment, one having to do with the ignition and the other two with the lubrication of the engine and chassis parts respectively.

Two-point or double-fire ignition is now employed, there being two spark plugs in each combustion chamber, at which sparks pass simultaneously. The sparks are generated by means of ignition set similar to that previously employed, but the breaker points, coil and distributor arm are duplicated.

The oil purifier carried on the new

Marmon is a combination of a still and a strainer. It is designed to remove four foreign elements from the lubricant in the crankcase, namely, abrasives, carbon, water and condensed fuel. The purifier is located on the exhaust manifold and comprises two chambers, an upper or distillation chamber and a lower or filtration chamber. In both chambers the oil is subjected to considerable heat, and as it becomes more fluid with increase in temperature this facilitates the filtration process.

The Marmon self-lubricator takes care of all spring shackle bearings, front axle bearings (except wheel bearings), tie rod bearings and two drag link bearings. Oil is fed to these places by a plunger type pump located on the dashboard and operated by the driver's right foot.

Ford Branch Starts Work on New Models

DES MOINES, IOWA., Sept. 19—Open models of the new types of Ford cars are already under production at the Des Moines branch of the Ford Motor Co. Practically all dealers served by the Des Moines plant have already been supplied with samples of the open models. The present schedule on open cars calls for a production of 170 daily. The plant is now employing about 1000 men.

The closed car department is being reorganized and rearranged to facilitate rapid production of the closed models. It is probable that this department of the plant will be under full production before the first of October. While the plant is being operated for one shift only at present, it was indicated that it might be necessary to work a night force for a time. Approximately 5000 unfilled orders are now on hand at the branch.

Humber Negotiates for Truck Plant

LONDON, ENGLAND, Sept. 13 (*by mail*)—The makers of Humber cars, who produce a range of three high-grade passenger cars, are negotiating for the purchase of Commercial Cars, Ltd., Luton. The latter concern was in financial difficulties two or three years back, but, under the management of a receiver for the debenture holders, has been carried on since at a profit, with increased sales. Whether it is the intention of the Humber executives to continue to produce trucks at Luton (which is 50 miles or so from the Humber plant at Coventry) is not known, though the probability is that the additional plant is required to increase the output of Humber cars, the Coventry plant having been run for some while past at its maximum output.

Plant Expansion Planned

SAGINAW, MICH., Sept. 22—The General Motors Corp., it is reported here, has arranged an expansion program at its malleable iron works in this city, estimated to cost \$850,000.

Remy Electric to Establish New Plant

Business Demands Additional Space to Handle New Models—Promotions

INDIANAPOLIS, Sept. 22—The Remy Electric Co. of Anderson, Ind., has announced that it is establishing a new plant at Muncie, Ind., to take care of additional business and to handle models on which it will go into production shortly. The plant, one of the factory buildings of the Muncie Products Co., a division of the General Motors Co., has a floor area of 80,000 sq. ft. and about 300 people will be employed.

In making the announcement, C. E. Wilson, general manager of the Remy Co., also announced that A. B. Gomery, who has been chief inspector of the Remy plant, will be superintendent of the Muncie plant. He will be succeeded at Anderson by M. E. Van Meter. Fred E. Kroeger has been promoted to the position of factory manager, with general supervision over the Remy Plants 1 and 3 at Anderson and the Muncie plant. Mr. Wilson said that there are now 4050 persons working at the Anderson plants and that prospects are good for heavy production in the next six months. Ignition switches and models requiring punch press parts, which will go into production in the next sixty days, will be manufactured at Muncie, according to the statement of Mr. Wilson. The establishment of the new factory for Remy will in no way reduce the Anderson plants.

Cadillac Demand Is the Greatest Ever

DETROIT, MICH., Sept. 21—Lawrence P. Fisher, president and general manager of the Cadillac Motor Car Co., announces that orders for cars taken by its branches, distributors and dealers for August and September are nearly twice as great as those of any corresponding period in the company's history. Demand for the new Cadillac throughout the country has been so great that the company is building in September the largest number of cars it ever produced in any one month.

"Retail orders already placed with our distributors, dealers and branches make it certain that they will sell and deliver more cars, by a large margin, during the last half of this year than during any previous six months they have ever known," says Mr. Fisher. "Despite the greatest plant operations in our history, demand continues ahead of the supply of cars. This is so, despite the fact that our August production was nearly three times that of our average August, and for September we are proceeding on an even larger basis."

"The public has given this new car the most enthusiastic reception."

California Favors Motor Stage Travel

Figures Issued by Railroad Commission Indicate Steady Increase

SACRAMENTO, CAL., Sept. 21—Motor stage and truck lines operating over the highways of California under the jurisdiction of the State Railroad Commission transported nearly 30,000,000 passengers and approximately 1,000,000 tons of freight in the calendar year 1924, according to a report just issued by the commission.

Public Favors Motor Stages

The use of motor stages by the public has been increasing steadily since 1922 throughout California. In that year 21,221,928 passengers were carried; in 1923 this number was increased by 8,440,980, while 1924 shows a gain of nearly half a million over passengers transported in 1923.

There are 682 stage and truck lines operating under the commission's jurisdiction. There are nearly 400 others outside this control, according to statements issued last month by the larger stage lines of the State. Of these, 102 carry passengers and baggage; 137 take passengers and express, while 43 carry passengers, baggage, express and freight; 121 transport freight and passengers, and 20 are authorized to carry freight and express only. In addition, there are 232 lines carrying freight alone, of which 70 are limited to the handling of special commodities, such as milk, fruit, vegetables, household goods, lumber, films, cement, livestock, oil well supplies and so on.

The gross operating revenue of all the companies reporting for 1924 totaled \$19,042,161, compared with \$17,554,981 in 1923. This gain, however, was more than offset by the increase in operating expenses, the difference between the gross operating expense for 1923 and 1924 being an increase of \$1,994,365 in 1924. Total for last year was \$18,231,526.

Net revenues for all the companies in 1924 aggregated \$810,635, or \$507,184 less than the net revenues of 1923. Profit for the year of all the "A" companies, after deducting all charges, such as taxes, interest and other miscellaneous items, was \$374,662. The similar profit of the "B" companies was \$343,447.

Plant and Equipment Investment

Plant and equipment investment of these motor stage and truck lines is placed at \$15,952,011 for 1924, all but \$2,206,046 of this sum being reported by the class "A" companies. Compared with this, plant and equipment investment figures for all companies for 1923 reached a total of \$13,557,975.

Equipment reports from the class "A" companies show 1188 passenger cars,

1117 trucks and 520 other vehicles, principally trailers, in service during 1924. Class "B" companies in 1924 reported the use of 537 passenger cars, 544 trucks and 24 other vehicles, largely trailers. This gives a total of 2930 pieces of equipment regularly devoted to the public transportation of passengers, express and freight over the highways of California.

New Rotary Valve Engine to Appear

PORTLAND, ORE., Sept. 21—A rotary valve for internal combustion engines has been perfected in this city by Ruben F. Barker, inventor and president of the company owning the patents and manufacturing rights. Mr. Barker formed a corporation known as the American Rotary Valve Motors Co. under the laws of Oregon in July, 1924, and caused three-fifths of the stock to be issued to himself in payment of the patent, the remaining two-fifths being sold to the public. The company now has several motors built, which are being used for demonstration purposes, with the object of interesting automotive and marine engine manufacturers to adopt the rotary valve principle on a straight royalty basis.

Applying the rotary valve idea to the engine of a standard Gardner sedan, the car made a run from Oregon to Los Angeles last August under trying conditions and on this and subsequent trips the engine operated without trouble of any kind. The manufacturers claim there is no vibration in an engine of this kind and that, apart from increased fuel economy and better performance, engine manufacturing costs can be reduced 30 to 40 per cent when produced on a quantity basis.

Photographs and a technical description of the new rotary valve engine will shortly appear in AUTOMOTIVE INDUSTRIES.

A. E. A. Offers Prizes for Christmas Display

CHICAGO, Sept. 23—Details of the third annual Christmas display contest for automotive dealers have been announced by the Automotive Equipment Association. Fifteen prizes will be awarded to dealers submitting photographs of the best trimmed windows featuring the idea, "Give something for the car this Christmas."

The first prize will be \$150, second prize \$100, third \$75, fourth \$50 and fifth \$25. The next ten prizes will be \$10 each.

The contest is open to all accessory dealers, car dealers, garage men, service station proprietors and others engaged in the resale of automotive equipment and service in the United States or Canada. No entry fee will be charged.

Photographs should be mailed to A. R. Mogge, merchandising director, Automotive Equipment Association, City Hall Square Building, Chicago, Ill.

Rubber Consumption by States in 1925

Ohio, Massachusetts and Maine
Account for More Than
61 Per Cent

WASHINGTON, Sept. 23—Ninety-three rubber factories in Ohio accounted for more than half of the 523,880,262 lb. of crude rubber consumed by 457 American factories in the first seven months of 1925, it is announced in a special report made public by the Rubber Division of the Department of Commerce. The Ohio factories accounted for 50.26 per cent, or a total of 263,293,469 lb. of crude rubber.

Massachusetts and Maine, with fifty-seven factories reported, rank second on the list with 56,900,778 lb., which represented 10.86 per cent of the total. Pennsylvania, Delaware and Maryland ranked third with thirty-nine factories accounting for 6.06 per cent, while New Jersey was fourth with sixty-nine factories consuming 6.01 per cent of the total crude rubber poundage.

Standing of Other States

Following is the standing of the other States and State groupings:

Wisconsin and Minnesota, fourteen factories, accounting for 4.95 per cent. Michigan, six factories, accounting for 4.70 per cent.

Connecticut, twenty-four factories, accounting for 3.69 per cent.

New York, forty-eight factories, accounting for 3.50 per cent.

Indiana, fifteen factories, accounting for 2.67 per cent.

California, twenty-one factories, accounting for 2.48 per cent.

Rhode Island, fifteen factories, accounting for 1.52 per cent.

Nebraska, Colorado and Missouri, nine factories, accounting for 1.23 per cent.

Illinois, twenty factories, accounting for 1.12 per cent.

Virginia, North Carolina and South Carolina, seven factories, accounting for 0.32 per cent.

Iowa, four factories, accounting for 0.27 per cent.

Oregon and Washington, five factories, accounting for 0.14 per cent.

West Virginia, Tennessee and Kentucky, four factories, accounting for 0.13 per cent.

Georgia, Alabama, Louisiana and Texas, seven factories, accounting for 0.09 per cent.

UNFILLED AUBURN ORDERS INCREASE

TOLEDO, Sept. 23—The Auburn Automobile Co. has just completed the biggest week in its history, according to E. L. Cord, vice-president and general manager.

Production has averaged fifty cars per day for the last week, which is a 25 per cent increase over any previous production.

Coming Events

SHOWS

- Sept. 21-26—London, England, Annual Cycle and Motorcycle Show under auspices of the British Cycle and Motorcycle Manufacturers and Traders Union, Ltd.
- Sept. 28-Oct. 3—Chicago, Fourteenth annual Safety Congress and Exhibit, Rainbow Room, Hotel Winton, under direction of National Safety Council, A. M. Smith, business manager.
- Oct. 5-9—Atlantic City, Young's Million Dollar Pier, Manufacturers' Exhibition in connection with American Electric Railway Association Convention.

- Oct. 8-17—London, Olympia passenger car show.
- Oct. 18-31—Salonica, Greece, First International Sample Fair.
- Oct. 29-Nov. 7—London, annual truck show.
- Nov. 26-Dec. 6—Berlin, Germany, Annual Automobile Show in the Kaiserdamm.
- Jan. 9-16—New York, N.A.C.C. National Annual Show, Grand Central Palace.
- Jan. 16-23—Cincinnati, 16th Annual Auto Show, Cincinnati Automobile Dealers Association, Harry T. Gardner, Manager.
- Jan. 30-Feb. 6—Chicago N.A.-C.C. National Annual Show, Coliseum.

- Feb. 15-20—Louisville, Ky., Louisville Automobile Show, Armory, under the auspices of the Louisville Automobile Dealers Association, J. Garland Lea, manager.

CONVENTIONS

- Oct. 5-9—Atlantic City, Young's Million Dollar Pier, American Electric Railway Association.
- Oct. 7-10—Montreal, Motor and Accessory Manufacturers Association Convention.
- Oct. 21-23—Boston, Fall Meeting, American Welding Society.
- Nov. 9-10—Chicago, Hotel La Salle, National Auto-

bille Chamber of Commerce.

RACES

- Sept. 30—Fresno, Cal.
- Oct. 10—Baltimore-Washington Speedway, Laurel, Md.
- Oct. 11—Charlotte, N. C.
- Oct. 12—Salem, N. H.
- Nov. 26—Los Angeles.

S.A.E. MEETINGS

- National
- Nov. 9-10—Chicago, Hotel La Salle.
- Nov. 12-13—Philadelphia, Automotive Transportation meeting.
- Nov. —Service Engineering meeting.

Tire Dealers Find Market in Florida

AKRON, Sept. 22.—Along with the boom in real estate, the rubber business in Florida is experiencing great prosperity, according to G. F. Laughlin, former Akron resident and now president of the Royal Palm Rubber Co. of Kelsey City, Fla. Mr. Laughlin came to Akron to purchase equipment for increasing production at his plant, which is the only tire manufacturing company in Florida. Sales have increased more than 50 per cent, he states. With the tremendous influx of automobile owners into the State, it is estimated that twice as many tires will be sold there this winter than last season.

General Tire & Rubber Co. officials say they turned down applications from many persons who want to handle General tires in Florida.

India Tire & Rubber Co., which has never been represented in the State before, is preparing to open a branch there. Other companies, already established there, are enlarging their sales organizations to reap the benefits of the increased production.

Uniform Car License Laws to Be Sought

CLEVELAND, Sept. 22.—When the National Safety Council convenes here Sept. 28 to Oct. 3, it will be asked by the Automobile Club of this city to join in a movement for a uniform automobile drivers' license law that will be applicable throughout the United States.

This recommendation is contained in a report which has been made by a special committee of the Cleveland Automobile Club, after an investigation that took up the safety situation in practically every large city of the United States. Under this measure, if adopted, examinations would be conducted of every driver to determine whether or not he is normal, physically and mentally, and is able to understand the fundamentals of car control and signalling.

Every driver would be required to carry his license with him, and on the back of it would be printed all cases of

previous arrest or accident.

A safety committee of the National Automobile Chamber of Commerce, of which George Graham, vice-president of the Chandler Motor Car Co. of this city, is a member, some time ago submitted a report, which called attention to the necessity of manufacturers of cars working to prevent the auto from becoming a menace. With manufacturers taking this stand, it is believed that the auto industry may be lined up with the Safety Council and Automobile Club in the movement.

Automobile Registration in Illinois Declines

CHICAGO, Sept. 22.—Registration of statistics covering new passenger cars in Illinois in August reveal that there was a decline of 32 per cent as compared with the previous month. Registrations normally are heavy in July, due to the fact that many defer them until after July 1 in order to take advantage of the semi-annual license fee, a fact which probably accounts for the decrease in August.

Registration of Fords was 44 per cent under July, caused probably by buyers waiting to see what the new models would be. Low-priced cars (excluding Fords) declined 25 per cent from the July figures, while the losses in the medium and high-priced classes were 24 and 30 per cent respectively.

Figures by Months

Following are the detailed figures for the first eight months of 1925:

Month	Fords	Low, excl. Fords
January	4,060	2,275
February	3,424	1,718
March	5,714	2,729
April	9,010	3,755
May	8,751	3,644
June	6,473	3,400
July	8,499	4,305
August	4,686	3,218
Total	50,617	25,044
	Medium	High*
January ..	5,748	808
February ..	4,977	612
March	6,416	784
April	8,801	861
May	8,014	899
June	6,383	828
July	8,787	1,035
August	6,646	720
Total ..	55,772	6,547
		137,980

*Includes miscellaneous cars not named.

S.A.E. of Detroit, Plans Fall Meeting

DETROIT, Sept. 22.—As the opening feature of its fall series of meetings, the Detroit section of the Society of Automotive Engineers announces an inspection trip to the proving ground of the General Motors Corp. near Milford, Mich., on Thursday, Oct. 1. After an inspection of the grounds and testing facilities, the S. A. E. members will be afforded an opportunity to witness actual tests of passenger cars to determine their hill-climbing ability, maximum speed, fuel economy, braking efficiency, accelerative ability and other important engineering characteristics. In the course of these tests much recording and testing apparatus will be displayed and demonstrated. Following these road demonstrations, the S. A. E. members will be the guests of the General Motors Corp. at a buffet supper.

In the evening, O. T. Kreusser, resident engineer in charge of the proving ground, will read a paper on the character of the tests conducted there, giving special attention to their significance to the multitude of American car owners. Admission to the S. A. E. gathering will be restricted to those holding passes, which may be obtained at the office of the society.

NEW AIR ROUTE STUDIED

WASHINGTON, Sept. 23.—The flight of Captain Weiss of the French Air Service in Lisbon in August is said to have been for the purpose of studying local conditions, with the idea of utilizing that city as an intermediate base for the France-South Africa and France-South America air services, according to consular advices just received here by the Department of Commerce. The South Africa service extending as far south as Dakar is already in operation for mail and has resulted in cutting the mail time from South America to France, the connection with South America being made by means of mail steamers.

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Car Sales Continue Brisk as Industry Swings Into Fall Season

Nation-wide survey indicates that retail car sales in October will compare favorably with those of last two months. Used cars are moving.

Time-payments lagging in some sections

By Norman G. Shidle

GENERALLY excellent new car sales, reasonably satisfactory movement of used cars in most parts of the country and a spotty situation as regards time payments and repossessions—that is the picture of the automotive retail condition as the industry enters the fall season.

Reports from every section of the country show that new cars sales were very good almost everywhere, September totals exceeding those of August in many cases and falling materially below August in practically none. Some areas had a marked slowing up in new car business during the first week or ten days of September, but heavy buying in the middle of the month compensated for the early slump.

Coupled with these very favorable records of September business come highly optimistic and apparently well-founded opinions that October will show results which will compare favorably with those of August and September.

Used car stocks seem to be in pretty good shape all over the country, although reports from Texas and parts of Ohio indicate that the number of used cars in dealers' hands is rising despite a reasonably active market in the used vehicles. New cars stocks are low, with many dealers pressing their factories for deliveries.

Outlook Highly Favorable

The very active new car market and the satisfactory used car situation, when coupled with the decrease in factory schedules which is taking place in a good many cases, combine to make the current automotive outlook highly favorable. The indications are that most factories are not being misled by the size of immediate demands into thinking that peak pressure from the retail field will continue indefinitely. Consequently, there are strong evidences to indicate that a steady balance between production and consumption will be maintained throughout the fall and winter, whatever turn the retail sales curve may take.

Underlying this excellent situation, however, is a somewhat spotty times sales situation which, as we have pointed out on a good many occasions during the last eight months, will bear careful watching on the part of factory executives. It is common knowledge that extremely liberal time sales terms are being extended in many parts of the country and a good many able financial men are beginning to look askance at the possibilities for evil involved in such a condition should there be a recession of any kind in general industry.

Credit Situation Improving

Telegraphic reports from many of our correspondents indicate that the credit situation is thoroughly satisfactory or improving. Such statements, for instance, come from Milwaukee, Louisville, Canton, St. Louis, Toledo, and Birmingham. But to offset these favorable reports are others from such centers as Los Angeles, Charlotte, N. C., Philadelphia, and other localities indicating that repossessions are on the increase. This undercurrent of instability in an otherwise firm situation is illustrated by the report from Los Angeles which says:

"Notwithstanding the exceptionally low down payments and the easy terms at which most new models can be purchased, the used car market continues to show a healthy condition. *It is significant of the possible perils in the new financing schedules, however, that repossessions in both new and used cars are showing a slight incline.*"

Something of the same thought is found in the statement of conditions in the Southeastern states which runs: "The immediate outlook for automotive trade in the Southeastern states is promising, with many dealers and distributors reporting accumulations of unfilled orders, but important financing companies report a marked slowing up in collections."

Other more optimistic reports show that in Milwaukee "time payments are being met promptly" that in Canton, Ohio, the banks say that "there is a better tendency to

meet monthly payments on automobile paper because of improved industrial conditions" and that in St. Louis "money is all right and there have been few repossessions due to failure to meet payments."

But despite some of these more favorable reports, there is little doubt that some relatively unsound time payment business has been done in the last six months and that care in the extension of credits in the next quarter will be a factor in preserving the stability of the industry throughout 1926. That some exponents of extremely liberal time payment terms as a means of expanding sales to the limit are changing their views to some extent is indicated by the report that Ford has sent a letter to his dealers in some territories pointing out that the Ford Motor Co. does not believe it advisable to accept time payments on Ford cars for less than a down payment of 25 per cent and that it does believe 12 months to be sufficiently long to clean up the transaction. It urges dealers to hold to 33 1/3 per cent down whenever possible.

Ford Urges Conservatism

The letter is said to point out to the dealer that Ford wants his products to be sold and stay sold and that he believes in protecting his business "in the eyes of general banking interests" furthermore the conviction is expressed that "on the 25 per cent down plan without recourse as much goods can be sold as with a lower plan requiring a co-maker on the note."

This would seem to indicate the beginning of the end of the Ford \$12.60 down plan which, while never officially backed by the Ford factory, was understood to have factory approval as an experiment. Apparently the experiment has failed.

There are other indications that some very definite efforts are being made to hold automobile time payments within terms which will build further business on a thoroughly sound basis. While finance company competition still is so keen as to result in extremely liberal terms in many places, there are a few evidences of a reverse trend as regards this situation.

For one thing, a definite attempt to get some real facts is about to be made. C. C. Hanch, general manager, National Association of Finance Companies, has just sent out a questionnaire to his members designed to obtain specific information about the results of various types of time payment terms. Data gathered through this survey will show, for example, the average loss per repossessed car which had 12 equal monthly installments; average loss on repossessed cars which had 16 to 18 months equal monthly payments; average loss per repossessed car which had "balloon note," or more than 18 months equal monthly payments. It will show also the percentage of repossessions in relation to the original down payment on both new and used cars as well as the proportion of paper handled by each company which is on a 12 month equal-payment basis.

Hanch Investigation Helpful

The results of such a survey as this should be of very great help in clarifying the question of "What terms are too liberal in automobile time payment financing?" Experience, properly interpreted, can give the answer more accurately and specifically than any other means.

A recent article by H. B. Lewis of Hare & Chase, published in *The Bankers Magazine*, gives another indication of conservative thinking in the finance company ranks. Pointing out among other things his belief that "the automobile industry today stands at the crossroads between wisdom and folly as to the use or abuse of its most effective merchandising asset (installment selling)," Mr. Lewis goes on to voice the conviction that "since the flood gates

have only been opened, the tendency (toward too liberal time payment terms) can be checked before much damage is done if the corrective measures are prompt."

These are but a few of the straws which indicate how the wind is blowing as regards retail financing of automobiles and, to the executive who is looking at the business trend on a longswing basis, the way the straws are pointing make the future outlook bright.

A good many automotive executives in analyzing the immediate future of the industry are looking to conditions and trends in other lines of business just as closely as to reports from the automotive field itself. The time payment situation in many other lines, for example, has been pushed to far greater lengths than the automobile men ever have thought of going. The result is that the American public has in its hands today a greater amount of unpaid-for merchandise than at any previous time. Failure of buyers to meet their credit obligations in these other lines would affect the various industries involved and thus finally affect automobile sales.

Crops, as always, will have an important bearing on business; consequently the agricultural field has to be watched. And so on through the other parts of the economic structure. With these fundamental conditions as a background, the detail of current reports from the automotive retail field give a well-rounded picture of the present situation.

Reports from the South are favorable on the whole, but several weak spots appear. "The larger dealers and distributors in the Southeastern States," the report from that section says, "appear to expect their respective volumes of business in the next twelve months to be slightly smaller than in the last twelve. Many dealers report, however, that they cannot make immediate deliveries on orders before Oct. 15, when the heavy accumulation of orders, unloosed after the recent wave of price cutting, will be wiped out.

Conditions in South

"A survey indicates that economic conditions are disturbed and uneven, marked differences existing even in contiguous sections. Eastern North Carolina this fall is on its feet again for the first time in four years. The tobacco and cotton crops in that section are of record-breaking proportions. In Western North Carolina, however, the severe effects of a long draught are being felt.

"South Carolina conditions," this report continues, "are less favorable as a whole than in North Carolina. South Carolina is not expected to be a promising field for sales until another crop is harvested."

Georgia reports that conditions in the agricultural sections are bad, except in the southern part of the State, while industry is being curtailed to some extent—as in the Carolinas—by a power shortage due to draughts. The Ford assembly plant at Charlotte, N. C., reported receipt of orders for 10,200 touring cars within a week after the new models were announced. Only touring cars were being produced up to the middle of September.

September automotive business in the neighborhood of Norfolk, Va., was decidedly below par except for used car sales, which have held firm.

Continued improvement is expected in the Birmingham, Ala., section as a result of a good cotton crop which is just going on the market. Sales have been excellent in the medium priced and low priced car field and fairly good for high priced cars. Used cars are moving slowly, but last year at this time they weren't moving at all. Credit conditions in the Birmingham district are good in general and there have been few repossessions of new cars.

From New Orleans comes a report of a good outlook for general business with the sugar cane crop about 85 per cent of normal and the rice crop satisfactory with the exception of some salt water damage. September recorded a slight increase over August in new car sales and many distributors have taken on new dealers in anticipation of increased business. The used car situation, New Orleans reports, is fairly good, especially in the cotton growing sections.

The effect of price reductions and new models, which, when first announced, failed to increase new car sales materially, began to be generally felt in the Louisville, Ky., region about the middle of the month. September sales ran well ahead of those for August. Used car stocks are lower than at any time during the past twelve months. Dealers are continuing to buy used cars carefully and low re-sale prices are enabling them to move these vehicles rapidly.

September brought about improvement in trade in Baltimore, Md., and surrounding territory. The September advance was so marked in fact that dealers in this section are more optimistic about fall business than they were a month or so ago. Business in the rural sections in Maryland as well as in Baltimore has shown satisfactory improvement. Maryland farmers had a successful season and as a result have money to spend.

Dallas, Texas, reports that "practically all lines of automotive business in this section were better in September than in August." The general situation in Texas and in parts of Oklahoma, Arizona and New Mexico is indicated by the fact that in these districts new car sales in September were about 20 per cent better than they were one year ago and dealers say that the outlook for fall business is bright. Used car business in September was 25 per cent better than a year ago and substantial improvement took place in parts and accessories sales.

St. Louis Sales Firm

There has been no letup in sales in the St. Louis, Mo., district and many dealers are far behind in deliveries. Used car stocks are beginning to cause some concern in this section although they have not yet grown to very large proportions.

The generally favorable conditions noted for the country as a whole are reflected as well in reports from the Middle West. Particularly optimistic is the summary conditions in the territory surrounding Milwaukee, Wis. Our correspondent there writes that "Predictions made earlier in the year that motor car sales for the last half of 1925 would be equal to or in excess of sales for the first six months appear at this time to be almost certain of fulfillment. Used car sales of all dealers and distributors of importance are very satisfactory. Relatively few dealers are overstocked with used cars. Time payments are being met promptly and dealers point out that if payments are made as well during October as they were during September, conditions will be quite satisfactory.

Lower prices and introduction of new models made September a satisfactory month in western Pennsylvania, according to reports from Pittsburgh. Dullness continues in the mining sections, but the situation shows signs of clearing up even there.

Indianapolis, Ind., reports that September was an excellent month for automotive sales and that October may hang up a new sales record in some automotive lines. Demand exceeds supply for new cars and used cars have been moving unusually well for the last thirty days.

October sales in the area surrounding Toledo, Ohio, promise to keep up to the September level, which was a good bit higher than had been expected by many

dealers. Finance is available for all types of automotive business and a slight tendency toward firmer conditions in this respect is noticeable.

A similar tendency toward improvement in the time payment situation is to be noted in the report from Canton, Ohio, while in Akron the business of most of the leading dealers is running more than 20 per cent ahead of last year. Used car stocks have increased somewhat in Akron recently despite the fact that used car sales have been fairly good.

Motor car sales in Boston and outlying sections have taken a new lease on life with the passing of the vacation season, while Philadelphia distributors are being hampered in selling chiefly by inability to get deliveries quickly enough. Business in the central Pennsylvania section still is good with acute shortages being reported in many popular lines, although used car sales have been only fair. Sales are holding up well in the vicinity of Rochester, New York.

Far West Prospects

Summarized briefly, reports from the far West show the following:

San Francisco, Cal.—Sales in central and northern California and Nevada were good during the last three weeks of September. Dealer stocks are low, but used car dealers are complaining that recent price reductions have cut in their business seriously. Trucks are moving slowly in the smaller towns and in the agricultural districts, but are holding up well in the cities.

Denver, Colo.—Fall trade in Colorado is generally good. An excellent wheat crop in the north and eastern sections has offset the failure of the sugar beet yield. Coal mining camps report unusual dullness due to caution, but business is booming in the cities and automobile sales are limited only by ability of dealers to make deliveries. Collections are good.

Salt Lake City, Utah—Automobile men with scarcely an exception describe business in this section as being in a healthy condition. There is every reason for their optimism as regards the next few months. Crops are well above normal with ready markets for everything at excellent prices. Added to this is the satisfactory condition of the manufacturing and mining industries of the State.

Seattle, Wash.—September was a fairly good month for automobile distributors in Seattle and for dealers in western Washington. Business conditions in the Pacific northwest are favorable to a better fall than last year. Particularly is this true of the agricultural sections, despite the fact that the used car market is a little heavy because of price reductions.

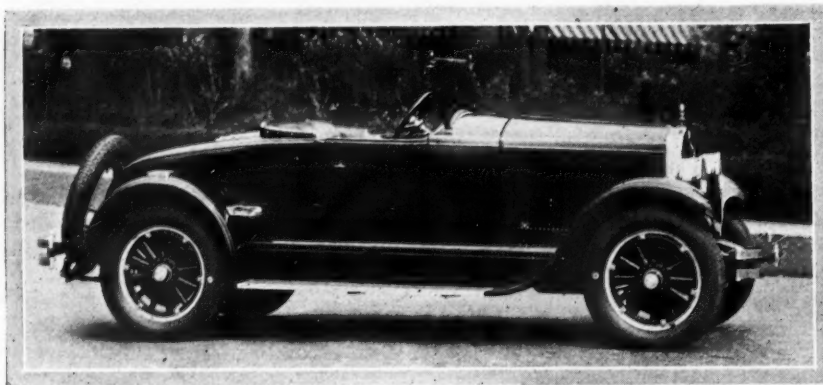
Los Angeles, Cal.—The September sales situation throughout the Southern California market is reported by Los Angeles distributors as entirely satisfactory, although complaints have been general in the inability to meet orders with deliveries.

Dealers in the farming communities particularly have been enjoying good business during the past two months, a fact which reflects the unusual prosperity of Southern California farmers this year.

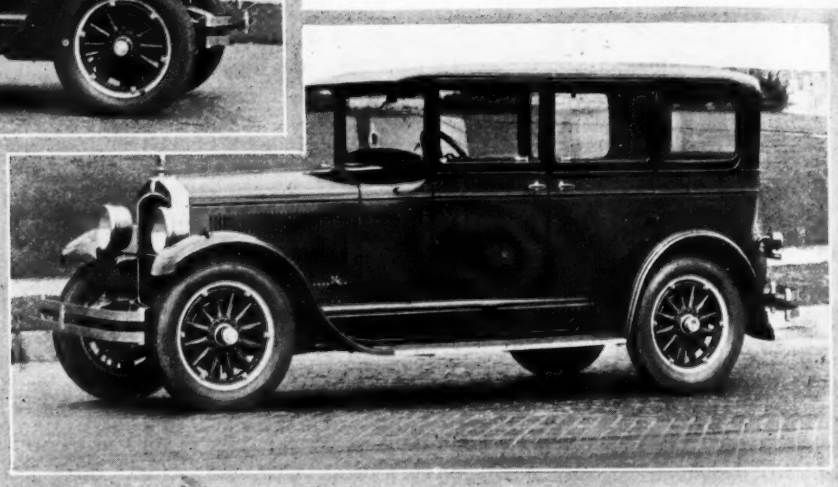
Next Week—

A summary of the discussions at the motor bus sessions of the 1925 American Electric Railway Association convention in Atlantic City, with description of the latest trends in bus design as reflected by the exhibits of bus manufacturers.

New Jordan Eight—Smaller



The new Jordan Model J Playboy roadster, above, is shown here without top. This is included with the car but is detachable. There is a cleverly concealed seat for two in the rear deck



The five-passenger Model J Jordan sedan, below, lists at \$1845. An unusually broad range of vision is obtained by the metal pillars and narrow door frames, an advantage gained by the use of metal body construction

Model J will supplement Great Line Eight, which is continued, and will be made in roadster and sedan types with all steel bodies. Handy oil drain valve a feature

By L. S. Gillette

OUTSTANDING features of the new addition to the Jordan line, the Series J, are a patented, all-steel type of body made in both roadster and sedan styles, a wheelbase of only 116 in., which is less than that of any eight-in-line car previously announced, and the prices of \$1695 for the open and \$1845 for the closed model, which are the lowest for cars with eight-cylinder vertical engine now manufactured.

The new car resembles the Great Line Eight in appearance and general design, being equipped with the latter, with Lockhead four-wheel hydraulic brakes and with balloon tires, the latter measuring 30 by 6 in. The engine is slightly smaller than that of the original Jordan eight, having a bore of $2\frac{7}{8}$ instead of 3 inches, which with a stroke of $4\frac{3}{4}$ in. gives a displacement of 246.6 cu. in. It is said to develop 64 hp. on the brake at 3,000 r.p.m., although the N. A. C. C. rating is only 26.4 hp. Except for a few minor refinements the larger eight will be continued in its present form by Jordan for the coming year.

In working up the designs for the new car, the bodies and chassis were developed simultaneously by the Jordan engineers working in conjunction with the engineers of the Edward G. Budd Mfg. Co., builders of the all-steel bodies.

The all-steel sedan has practically the same inside room as the composite wood-and-metal bodies on the larger chassis, although there is a difference in wheelbase of $9\frac{1}{2}$ in. This has been made possible by the saving in interior space due to the smaller wall thickness of the metal construction and by special attention to space economy in designing the forward end of the body adjacent to the engine.

Speed 2 to 68 M. P. H.

During a road demonstration arranged for this paper, one of the new sedans, standard in every respect, showed a speed range in high gear from 2 to 68 m.p.h., and at no time during the test did the engine appear to have any noticeable period of vibration. Over rough roads the car showed excellent riding qualities and ability to hold the road. The gasoline consumption is given as one gallon per 16 to 18 miles, and the oil consumption as one gallon per 600 to 800 miles, varying with road conditions and drivers. An unusually broad range of vision is obtained from any point inside the sedan, because of the narrow pillars and door frames resulting from the metal construction, which also eliminates sundry noises which often give trouble with composite types of body.

Lighter and Lower Priced

Although the new eight in line "L" head engine, is built by the Continental Motors Corp., it was designed by the Jordan Co., which owns the dies, patterns, jigs and tools. The engine is almost identical in design with the engine used in the larger car, which is also built by Continental.

The upper half of the crankcase is cast together with the cylinder block, while the head is a separate iron casting and the oil pan is of pressed steel. As in the older model, four-point suspension is used, the rear supports on the flywheel housing being bolted to lugs secured to the frame and the front end of the powerplant resting on brackets carried by a frame cross member.

Lanchester Vibration Damper

On the forward end of the five bearing, heat treated crankshaft, a Lanchester vibration damper is mounted, and is bolted directly to the fan drive pulley, the latter transmitting the drive to the water pump and fan by a "V" type link belt. In addition to putting the crank shaft in static and dynamic balance, as is customary, the shaft is machined all over which, besides making it easier to balance, makes a very clean job. All of the five babbitted main bearings have a diameter of $2\frac{5}{8}$ in. and with the exception of the rear bearing, which is $2\frac{1}{2}$ in. long, the lengths of all bearings is the same, namely, $1\frac{1}{2}$ in.

The connecting rods, with a center-to-center length of $9\frac{3}{4}$ in., are of S. A. E. No. 1045 drop forged steel, with bearing caps of the same material and fastened by two chrome nickel steel bolts. The big end bearing is babbitted, $2\frac{1}{4}$ in. in diameter and $1\frac{5}{16}$ in. long. Phosphor bronze bushings to take the burnished piston pins, of $2\frac{17}{64}$ in. length and $55/64$ in. diameter, are fitted in the small end, a lock nut locks the piston pin in place in the piston, in addition to which there are snap rings at the ends of the pin. The cast iron pistons, of $3\frac{5}{8}$ in. total length, are fitted with three rings, all above the pin, with oil holes drilled through the piston wall beneath the lower rings.

The camshaft and the combined generator and ignition unit are driven by a No. 4 Morse chain which is adjusted by means of an eccentric mounting of the generator. An inspection opening in the timing case cover facilitates this operation and allows an accurate adjustment to be made. By stepping down the diameters of the five camshaft bearings from $2\frac{5}{16}$ in. at the front to $1\frac{3}{4}$ in. at the rear, it is made possible to withdraw the shaft through the front of the engine. Each of the three center bearings has a length of $\frac{7}{8}$ in. while the rear bearing is 1 in. and the front bearing $1\frac{11}{16}$ in. long.

Mushroom type tappets, composed of a steel stem electrically welded to a chilled iron head, operate the poppet valves. Contrary to the usual practice, the clear diameters of the inlet and the exhaust valves are not alike, the former being larger by $\frac{1}{8}$ in., measuring $1\frac{1}{2}$ in., but the $5/16$ in. lift and the 45 deg. seat angle are the same for both. Alloy steel is used for the double valve springs. Valve timing is as follows:

- Exhaust closes 8 deg. after T.D.C.
- Exhaust opens 40 deg. before B.D.C.
- Inlet opens 8 deg. after T.D.C.
- Inlet closes 40 deg. after B. D. C.

By removing two cover plates the valve mechanism is made accessible for inspection and adjustment.

A pump submerged in oil in the crankcase and driven through a vertical shaft and helical gears off the camshaft forces oil through copper leads to each of the main bearings and from there through holes drilled in the crankshaft to the crank pin bearings. Through ducts drilled in the crank case webs, oil is taken from the main bearings and supplied to the camshaft bearings. Positive oil flow to the accessory shaft bearings and the timing chain is provided for, while the piston, pins, cylinder walls and valve mechanism are lubricated by splash. Seven quarts of oil are required to fill the crankcase up to the proper level.

A convenient arrangement is provided whereby the crankcase can be drained of oil by merely pressing down on a plunger accessibly located on the outside of the engine. This same improvement was introduced on the larger eight some time ago. The valve is located at the lowest point of the oil pan and is of the poppet type. It is held against its seat by a spring and operated by a rod extending up to the plunger. Alongside of the plunger is located the bayonet or blade type of gage for measuring the amount of oil.

Mounted directly at the front end of the cylinder block casting is the centrifugal water pump and fan unit. The pump shaft, which also carries the 18 in., four bladed fan, is supported at the pump end in a bronze bearing, while at the forward or fan end it is carried on two taper roller bearings which are located in the assembly mounting and bolted to the block. By simply withdrawing a set screw, it is possible to move the front flange of the fan pulley either in or out, thus providing a very easy form of belt adjustment.

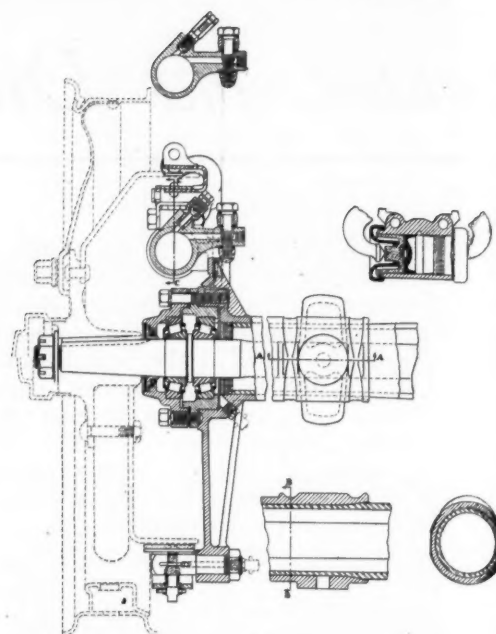
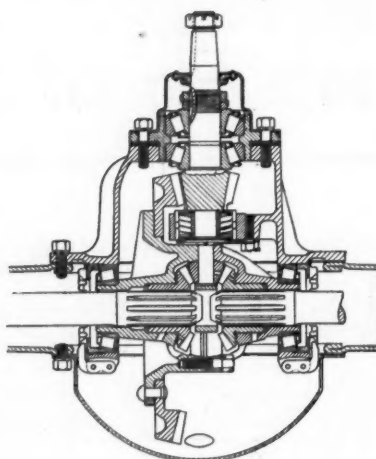
New Radiator Detail

Both the radiator and the nickel-plated shell are identical with the corresponding parts on the larger car, except for the improved method of attaching the cellular type core to the frame. The radiator is carried on the cross member which also supports the engine, being fastened thereto by two studs and resting on leather washers which assist in absorbing shocks. The hold-down studs are fastened to the cradle which entirely surrounds the radiator core, so that any sudden shocks to the studs would be absorbed in the cradle. The water capacity of the entire cooling system is $4\frac{1}{4}$ gal.

Between the Stewart vacuum tank, which draws fuel from the 17 gal. tank located at the rear of the chassis, and the carburetor, a Gas-Co-Lator strainer is placed, to prevent water and other foreign matter from entering the carburetor. The latter is a model OX-2 Stromberg of $1\frac{1}{4}$ in. nominal diameter. As a further guard against impurities entering the engine, a United centrifugal air cleaner is fitted as standard equipment. The intake pipe has an inside diameter of $1\frac{3}{8}$ in., and is connected with the exhaust manifold so as to form a hotspot for heating the incoming gases.

Except for slight changes in the mounting flanges, the starter and the generator-distributor, which are of American Bosch manufacture, are the same as those employed

Rear axle of Jordan Series J, showing axle center and rear wheel



on the larger engine. The starter has a gear reduction of 2 to 1 to the Bendix drive and with the further reduction by the Bendix pinion and the flywheel gear a total reduction of 22 to 1 is obtained.

The third brush type of generator, which is regulated for 12 to 14 amperes output when cold, has the distributor directly mounted upon it. The latter is provided with automatic advance and is driven off the rear end of the generator shaft by helical gears with the thrust taken by a button and spring located in the timing chain cover.

Ignition cables protected by conduits are led to Champion sparkplugs which are of the standard $\frac{7}{8}$ in., 18 thread type and located directly above the inlet valves in the cylinder head. The firing order is 1-6-2-5-8-3-7-4. A push-pull ignition switch is mounted on the instrument board. Current is supplied by a six-volt Willard threaded rubber battery located under the left front seat, and the wiring is by the ground return system.

Single Dry Plate Clutch

Mounted inside the flywheel is a Long clutch of the single dry plate type, which, except for changes in two of the anti-friction bearings, is standard throughout. The clutch pilot bearing is a Hyatt roller type. The selective type gearset, which forms a unit with the engine, is manufactured by the Warner Gear Co. With the exception of the reverse gear mounting, anti-friction bearings are used, annular ball bearings being employed on the main and flexible roller bearings on the secondary shafts. Having ground teeth in all gears, the transmission is exceptionally quiet when in first and second speeds. The ratios of the three forward and one reverse speeds are:

Low—	3.12 to 1	Third—	1.00 to 1
Second—	1.69 to 1	Reverse—	3.78 to 1

Built integral with the gearset is a positive type of transmission lock. At either end of the heavy walled $1\frac{3}{4}$ in. tubular propeller shaft is a metal oil-tight universal joint. Both the shaft and the universals are products of the Universal Drive Shaft Co.

Semi-Floating Rear Axle

The rear axle is of the semi-floating type employing a spiral bevel gear drive and a four pinion differential. It is built by Timken. As on the larger model, the Hotchkiss drive is used, the driving and torque strains being taken on the rear springs. By employing the "straddle" type of bearing mounting, with two roller bearings in front of the pinion and one behind, the latter is very rigidly supported. Two Timken roller bearings at each wheel eliminate the thrust button at the center of the two axles and make each wheel independent of the other as far as thrust

is concerned. Standard gear reduction ratios on the Playboy and sedan models are 4 5/11 to 1 and 4 7/11 to 1, respectively. The road clearance under the axle is $8\frac{1}{2}$ in.

To take the torque due to front wheel braking action the front axle, built by Timken, is provided with a cylindrical section near the knuckles. Ball type thrust bearings carrying the load on the knuckles make for easy steering. The cross rod is located behind the axle, while the steering drag link is interchangeable with that on the larger car.

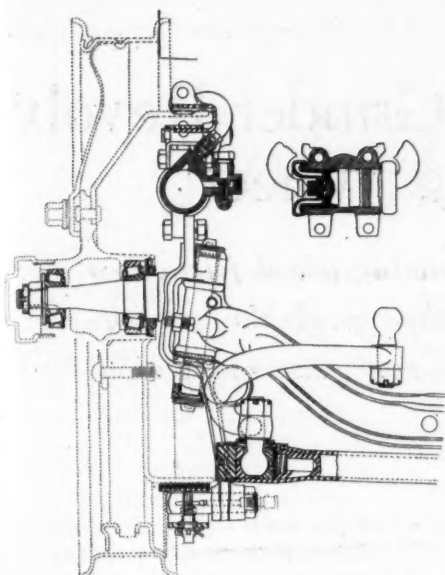
A Model 80 Gemmer worm and sector type steering gear provides a gear reduction of $11\frac{1}{2}$ to 1, which is specially adapted to balloon tires. Except for length it is the same as that employed on the Series "A" model. Bearing adjustment for wear is provided for both the ball thrust bearings and the pivot bearings, the latter being of plain phosphor bronze. The 17 in. steering wheel, together with the spider, is of walnut, with the throttle and spark controls mounted in the center.

Many parts of the Lockheed hydraulic four-wheel braking system are interchangeable with the same parts on the larger car, including the four brake bands. The drums have an outside diameter of $14\frac{3}{4}$ in. and are 2 in. wide. Operating on a drum 8 in. in diameter by $2\frac{1}{2}$ in. wide at the rear of the transmission, the emergency brake is also of the external contracting type.

Channel Section Frame

A channel section frame by Parish & Bingham, comprising 6 in. side bars and made of 5/32 in. stock, is employed. Exceptionally rigidity is attained by providing three gusseted cross bars and three torsion resisting members in the form of tubes, the latter being placed one at either end and one at the center. The rear motor support construction forms an additional transverse member, making seven cross braces in all.

Chrome-vanadium steel is employed for the semi-elliptic front and rear springs which are of Mather make. These springs are of the same dimensions as those used on the larger car—2 in. wide, 37 in. long for the front and 55 in. for the rear. It is claimed that by holding to very close limits in milling the spring eyes and by beveling the edges of the leaves, practically all noises resulting from spring movements are eliminated. With the same object in view, self-lubricating and self-adjusting, rattle-proof shackle bolts were adopted. The diameters of these bolts are $\frac{5}{8}$ in., except that the bolts at the front end of the



Front axle end with details of hydraulic brake

rear springs are $\frac{7}{8}$ in. in diameter. The Alemite system of chassis lubrication is employed.

The fenders are of the double-beaded crown type, and, together with the front and rear spring splash pans, are given a japan finish. The running boards are covered with corrugated rubber and bound with aluminum moulding.

In connection with the all-steel bodies it may be pointed out that besides giving improved vision they possess greater strength and reduced weight. The removable upholstery can be detached for cleaning and repairs and permits the speedy removal of dents in the body. Inlaid walnut trim, flush type vanity cases, silver hardware of New England design and harmonious upholstery colors are to be found in the sedan model. A one-piece windshield, swinging from the top, and a cowl ventilator adjustable to three positions are employed. The floor covering is a padded elastic rubber mat.

Neverleak Curtains

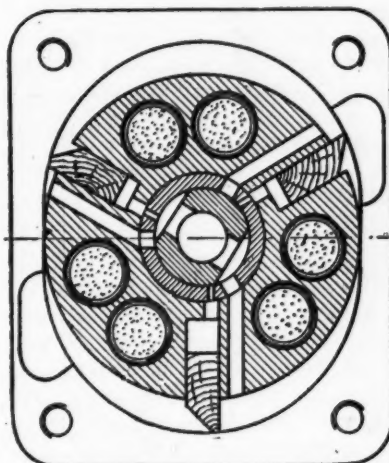
"Neverleak" material is employed for the top and side curtains of the Playboy model, the curtains being carried in a door pocket. To facilitate conversation with the two passengers which can be carried in the folding rear seat, or for better ventilation in hot weather, the rear panel can be taken out of the top when it is in the raised position. The trim and the upholstery of the folding rumble seat are of genuine hand-buffed leather. The exterior finish on both panels is in lacquer, which is rubbed down to either a semi-polished or satin finish.

Auxiliary 4 c.p. bulbs for city driving are provided in the nickel plated, new design Edmunds & Jones headlights. A combination tail and stop light is also furnished. All bulbs are for 6-8 volts and have a single contact base, while the lighting switch is placed in a convenient position on the steering column directly under the wheel. Between the two panels carrying the dials on the instrument board are located the ignition switch and the choke control. A 75 mile Stewart speedometer and clock are mounted in the right-hand panel; an oil gage, a gasoline gage and an ammeter in the left. The following items are also included as standard equipment: Automatic windshield cleaner, rear-view mirror, transmission lock, cowl ventilator, motor, set of four shock absorbers and combined vanity and smoking cases on the closed car.

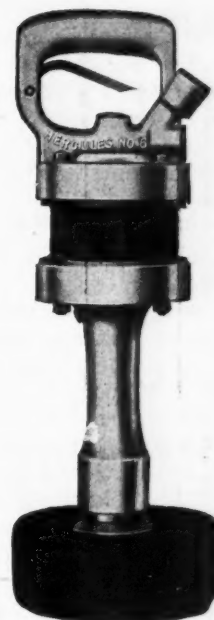
Rotary Type Air Engine in Portable Pneumatic Tools

A ROTARY type of air engine is used in the Hercules portable air tools made by the Buckeye Portable Tool Co. of Dayton, Ohio. As may be seen from the sectional view herewith, the motor comprises a cylindrical rotor inside a chamber of oblong section so that two crescent-shaped expansion chambers are formed between the walls of the housing and the rotor. The rotor carries three radial sliding vanes of wood, which are pressed against the inner wall of the housing by the pressure of the air. The valve mechanism is located at the center of the rotor, and is so designed that air from the line is admitted to a working or expansion chamber during an angular motion of 60 deg. Then the inlet port is closed and during the next 60 deg. of travel the air contained in the chamber expands. At this point the sliding vane or piston begins to uncover the exhaust port in the wall of the chamber and the spent air escapes rapidly.

As there are three pistons or vanes, two of them are at all times under the action of the expansive force of the air and the torque of the engine is notably uniform. Moreover, as all parts are endowed with rotary motion the air motor is quite free from vibration. Each piston performs two power strokes, (if that term may be used with a rotary engine) per revolution.



Sectional view of Hercules portable air tool and the Hercules No. 7 buffer



The air engine described is used as the power element of portable drills, grinders and buffers. The No. 00 drill, which takes bits up to 1.4 in., has a speed of 1800 r.p.m. and weighs 6 $\frac{1}{4}$ lb., while the No. 0 drill has a speed of 1200 r.p.m., takes bits up to $\frac{3}{8}$ in. and weighs 9 lb. The grinders and buffers are said to be much used in automobile body work.

It has been found that the Durrell methane indicator, which was developed at the Pittsburgh Experiment Station of the Bureau of Mines, is also applicable to the detection of small percentages of vapors that may be given off by crude petroleum or its products. Technical Paper 352 of the Bureau of Standards, entitled "Detection of Small Quantities of Petroleum Vapor with the Burrell Methane Indicator," of which G. W. Jones and W. P. Yant are the authors, deals with this subject.

Why Work in a Centerless Grinder Revolves with the Regulating Wheel

For peripheral speeds up to that of the regulating wheel friction of both wheels accelerates work, whereas for higher speeds the two frictional forces would be opposite and friction rest cause retardation

By P. M. Heldt

AT the machine tool session at New Haven of the American Society of Mechanical Engineers there was some discussion as to why the work in a centerless grinder rotates at the same peripheral velocity as the regulating wheel.

The author of the paper on centerless grinding, without going into details, said it was due to the fact that the friction of rest is greater than the friction of motion, but this statement was taken exception to by one of the engineers who took part in the discussion, who said it was due to the momentum of the work.

Another speaker pointed out that when the work is rotating at uniform speed the different forces on it must be in equilibrium, and he also mentioned that there was both a radial and a tangential force active at each of the three points of contact on the circumference of the work.

Reason Easily Explained

The reason for the observed action of the work in a centerless grinder can be readily explained with the aid of a simple diagram and the application of a few fundamental principles to the problem in hand. Two diagrams of the work, the regulating wheel, grinding wheel and work support are shown in Fig. 1. At each point of contact there is a certain contact pressure between the work and the wheel or support, and at each point there is also active a certain tangential force which bears a definite relation to the contact pressure at that point as long as there is relative motion at the point.

It is obvious that a radial force cannot produce rotary motion of the work, hence we need consider only the tangential forces. When a piece of work is put into the grinder it has no rotary motion, and whatever rotary speed it assumes eventually, it is brought up to this speed gradually, passing through all intermediary speeds.

Owing to the fact that the tangential forces at the points of contact between work and wheels are much greater than the tangential force at the point of contact with the support, and as the former are active forces tending to set the work in motion while the latter is merely a reactive force or resistance tending to stop any motion, it is obvious that the work will be set in motion.

At first the work will revolve with a peripheral speed slower than that of either wheel. Under this condition the tangential forces at both points of wheel contact are in the same direction, and as these forces are greater than the reactive force at the point of contact with the support, it is evident that the work will be speeded up. This is indicated in the left hand diagram in Fig. 1.

When the work attains the speed of the regulating wheel the direction of the tangential force at the point of contact with this wheel reverses in direction, for if the

peripheral speed of the work were ever so slightly greater than that of the wheel, there would be a drag on the work at this point, instead of an accelerating force.

Let us consider for a moment that such a thing could occur, that the work could turn at a higher peripheral velocity than that of the regulating wheel. This condition is represented in the right hand view in Fig. 1. Supposing the peripheral velocity of the work to be still lower than that of the grinding wheel, a grinding action would then occur at both points of wheel contact. Assuming the wheels to be of the same grade and the angular distances between the two points of contact with the wheels and the point of contact with the support, respectively, to be the same, the radial forces at the two points of contact with the wheels would be the same and the tangential forces at these two points would also be the same. These two forces would therefore neutralize each other.

Under these conditions the reactive force at the point of contact with the support, which always tends to stop the work from rotation, would retard the motion of the work.

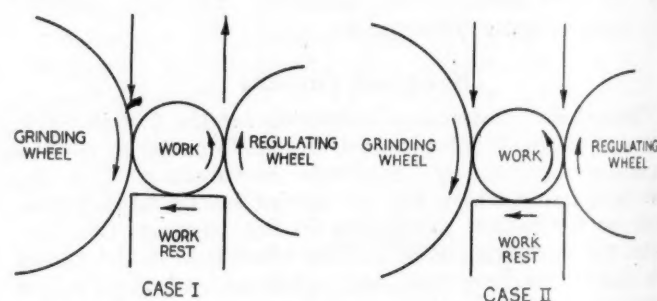


Fig. 1

Hence, as long as the peripheral speed of the work is smaller than the peripheral speed of the regulating wheel, the tangential forces at the points of contact with both wheels are in the same direction, and as they greatly predominate over the reactive force at the point of contact with the support, they cause the work to accelerate. On the contrary, if the work should revolve at a speed intermediate between the peripheral speeds of the two wheels, the tangential forces at the points of contact with the two wheels would be equal and opposite, and the reactive force at the point of contact with the support would then retard or decelerate the work. It is, therefore, obvious that the work attains a state of equilibrium when its peripheral speed becomes equal to that of the regulating wheel, and that it cannot accelerate beyond this speed.

Just Among Ourselves

Are Tire Stocks Exceptionally High?

RUMORS of heavy tire stocks in dealers' hands are persistent. Despite the fact that stocks in the fall normally are supposed to be lower than in the spring, some students estimate that the average stock per dealer today is something like 125 as against the average of 62.2 tires per dealer indicated by the survey made last spring by the Rubber Division, Bureau of Foreign and Domestic Commerce, last April. Speculation as to the present situation won't be necessary much longer, however, as the Rubber Division is about to conduct its third semi-annual survey of tire stocks. More than 100,000 questionnaires have been mailed to tire dealers throughout the country. The survey will be as of October 1, 1925. By the 20th of October, the Rubber Division expects to be able to give at least a preliminary announcement about the result of the investigation. A complete statement is expected by November 1. Getting results of a government survey within 30 days is something to get excited about. It means that government figures can be of really practical use to the industry—and that the industry may profitably go a bit out of its way to help make the survey a success.

Foreman Training Argument Goes On

ECHOES are likely to be heard for some time of the foreman training argument which developed at the S. A. E. Production Meeting in Cleveland. On the surface the debate revolved around the question as to whether foremen training should or should not be delegated to some outside agency. Fundamentally, however, a deeper issue was involved—whether or not it is

possible for the management to break down the atmosphere of suspicion which frequently exists between it and its foremen or between it and its workers. Those favoring outside agencies brought in to handle the training base their argument largely on the fact that the foreman is suspicious of the management and that he can be made to accept as unbiased only such material as is presented to him by someone not directly representing the management. Those strongly believing that the management should handle its own foreman training and relationships, point out that if the foremen won't accept material from the management without suspicion there is something fundamentally wrong with the labor relationships in the plant and that every effort should be concentrated on remedying that fundamental condition before bothering about the more superficial matter of foreman training at all.

Industrial Relations in Individual Plant Obligations

PERSONALLY we think that the management of any plant must accept full responsibility for all of its industrial relationships and that any attempt to "farm out" any phase of the personnel function is almost certain to result in ultimate failure. Granting the presence of considerable suspicion between management and foremen in many cases, the outlook is very black for the future of industry if the theory be accepted that such suspicion cannot be broken down or reduced to a minimum. Let's follow that idea to its logical conclusion. If the suspicion can't be broken down, it must be that there is some basic and legitimate reason for its existence, because otherwise full understanding would minimize it. Then it

follows that the foreman or the workers have only one course open in the long run, that of opposition to management. Interpreted in other words, that means the doctrine of the class struggle. It doesn't sound reasonable for modern management to be preaching the doctrine of the class struggle and, as a matter of fact, we believe it can be proved—by a train of logic too long for us to rehearse here right now—that the class struggle is not a sound basis for economic development from the standpoint of either management or workers. To break down the attitude of suspicion between foremen and management admittedly may be very difficult in many cases, but unless its possibility is admitted, there would seem to be relatively little hope for the future development of industry along peaceful lines.

Appetite for Work and Suppressed Desire

WE were impressed by a phrase which Mrs. Gilbreth used in that same meeting. She spoke of an "appetite for the job" as a requirement of efficient workmanship or rather as a quality to be desired in men selected for training. She said that the psychologists call the same thing something like "suppressed desire." We're entirely with Mrs. Gilbreth in her statement about the need for "an appetite for the job" on the part of the worker, but we offer that it isn't synonymous with "suppressed desire." Whatever desire for work we ever have had has never been suppressed that we can remember, but we've done a lot of things from time to time in the way of work that we didn't exactly have an appetite for. Suppressed desire probably is a bit more common than appetite for work.—N.G.S.

Marmon Adds One-Shot Lubrication and Oil Purifier

Double fire ignition also adopted. Improvements said to give increased power, greater gasoline economy, better acceleration and cooler exhaust valves

CHANGES made in the design of the Marmon 74 chassis have increased the power and acceleration and decreased the fuel consumption and the tendency toward exhaust valve overheating, carbon formation in the combustion chamber and oil dilution in the crankcase. There have been three major changes in the design. Double fire ignition, by means of simultaneous sparks at two different points of the combustion chamber, is now employed; an oil purifier has been added and chassis lubrication is now by an automatic system.

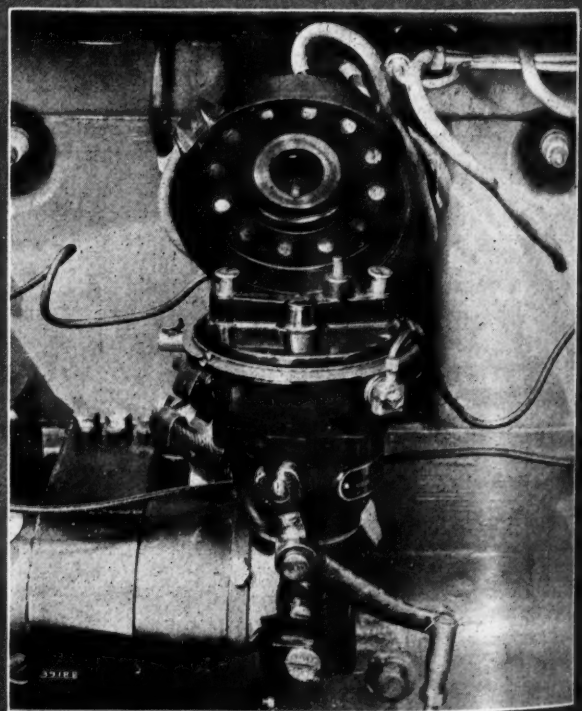
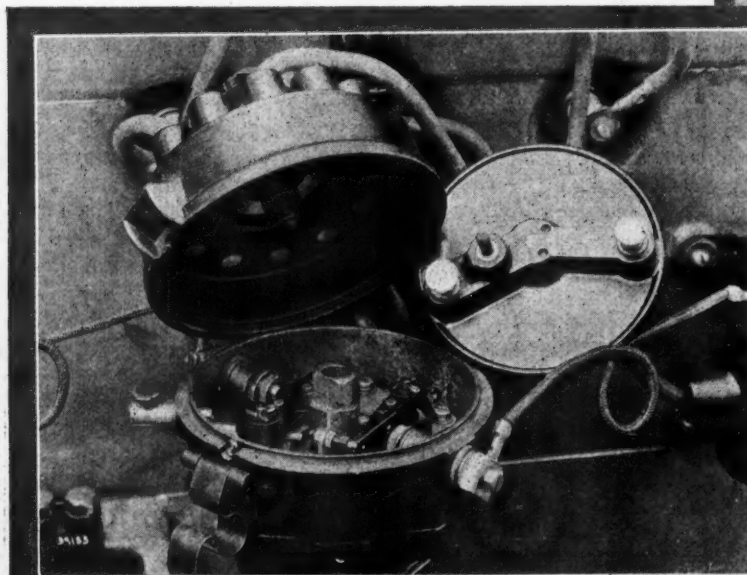
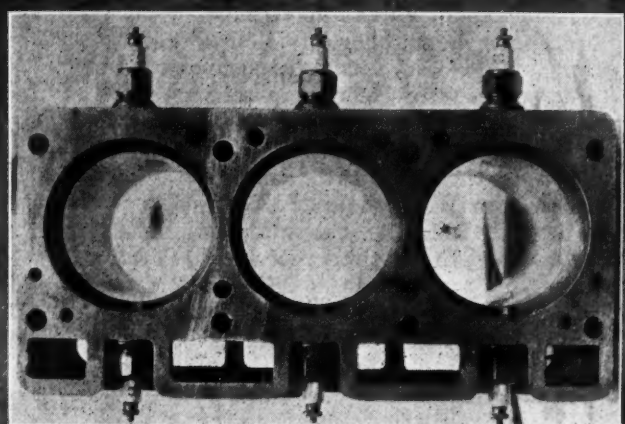
Two spark plugs are provided in each cylinder for the double fire ignition. These are located directly opposite each other in the combustion head. The ignition system comprises the battery and generator as sources of current, and a distributor mounted on the rear of the generator, from which six pairs of cables lead to the twelve plugs. Aside from the fact that the plugs and high tension leads are doubled, the operation of the system is exactly the same as that of the system previously used.

Current from the source flows to the two sets of breaker points, one for each set of plugs. Each breaker controls the flow of primary current through one of the coils. Each coil then feeds high voltage or secondary current to the

contact points in the distributor head, the forward coil being connected to the central terminal from which a carbon brush carries the current to a metallic ring in the distributor head. The two high tension contact points in the distributor head carry the current to two buttons on the rotor, which latter determine the cylinder that is fired when the breaker points break contact.

In designing its oil purifier the Marmon Company aimed at the removal of four contaminating elements, namely,

Above, at right, is a top view of the Marmon cylinder block showing location of spark plugs. Below—Ignition unit, showing details of double breaker. Below, at right—Ignition unit, showing distributor head and distributor disk



abrasives, carbon, water and condensed fuel. Abrasives are more easily removed when the oil is hot than when it is cold, as hot oil will flow through a much finer filter, which will separate out the finest particles of grit. To ensure a proper heat supply the Marmon three-way purifier is secured to the exhaust manifold between cylinders Nos. 4 and 5 and the exhaust gases from cylinders Nos. 5 and 6 pass around the distillation chamber A through the gas passage J. The purifier has two chambers, the upper or distillation chamber A, and the filtration chamber B.

Four Tubes to Purifier

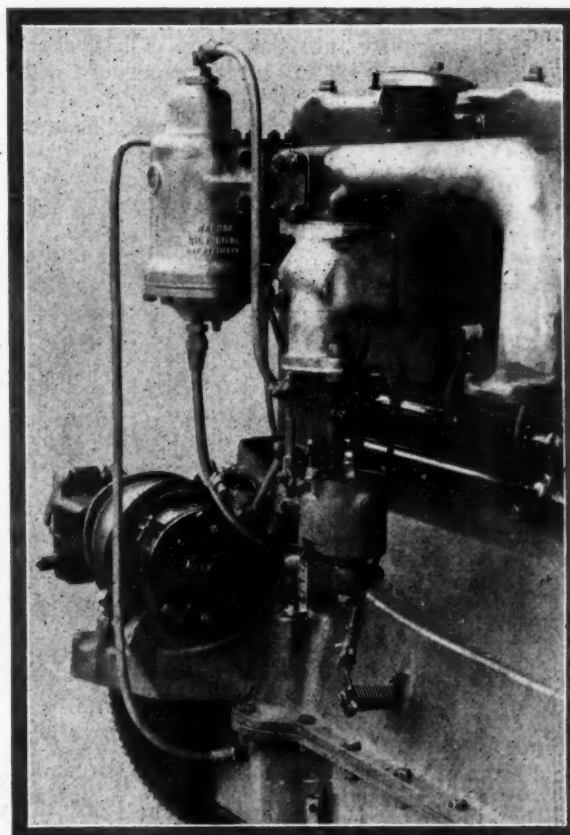
There are four tubes leading to the purifier. Tube K is the oil feed tube from the pressure regulator to the purifier. E is an air inlet tube, leading from the crankcase up through the center of B into the upper part of A, venting the distillation chamber when oil is being drained from it.

Tube G is a syphon which automatically drains off the oil from A each time the float D rises. The asbestos filtering sack C prevents abrasives from being fed back into the oil. I is an air valve operated by float D. The filter sack C has a very large area and the passage of oil through it is consequently very slow. In the process of filtration, all carbon suspended in the oil is removed. Tube F from the upper chamber A carries fuel and water vapors to the carburetor intake to be drawn into the engine along with the mixture.

After having passed through the filter sack, the oil passes out of the top chamber B into chamber A, through the opening L. Here the oil is subjected to a much higher temperature, which will cause the evaporation of the water and fuel, but is not sufficiently high to break up or coke the lubricating oil.

As the temperature of the oil in Chamber A increases any water in emulsion is quickly turned to steam and is drawn off through the vacuum lead F to the carburetor inlet. At a still higher temperature any fuel contained in the lubricating oil is distilled and passes off through the vacuum lead F. The lubricating oil continues to rise in chamber A until it reaches a level almost even with the top of the float D.

Tube G is filled with oil and when the lubricant in chamber A reaches the same level as the top of tube

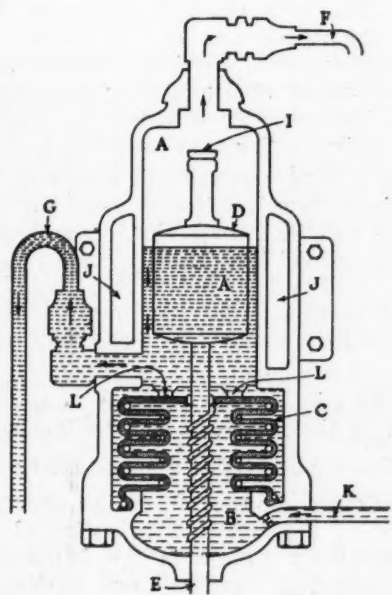


Rear end of engine with oil purifier in place

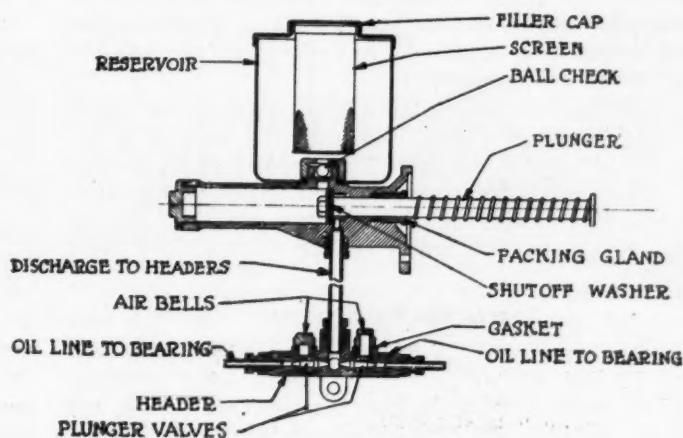
G, this tube becomes a syphon and seeks to draw off the oil in chamber A. However, the upper part of chamber A communicates with the carburetor intake through tube F, and therefore is under vacuum, and as long as this vacuum exists, the syphon cannot become operative.

When float D rises, the valve I at the top of tube E is opened and air from the crankcase rushes in through E to raise the pressure in chamber A to atmospheric. At this point the syphon in tube G becomes operative and draws off all of the oil in chamber A. With the oil level again lowered, float D lowers to close the valve I, and the operation of distillation in chamber A is repeated.

The Marmon self lubricator takes care of all spring shackle bearings, all front axle bearings (except wheel bearings), tie rod bearings and two drag link bearings. The system makes use of a plunger pump located on the



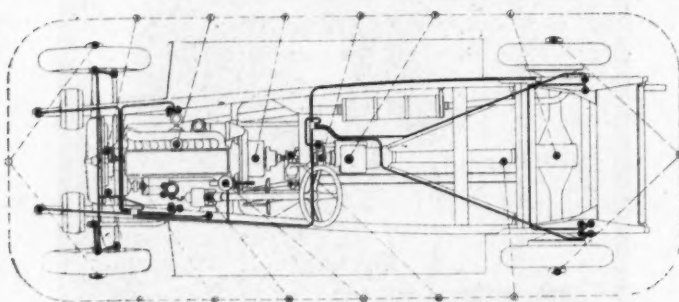
Section of Marmon oil purifier



Sectional view of automatic chassis lubricator

dash and operated by the driver's right foot. Oil from the tank is fed by gravity into the pump, a ball check preventing a return flow of oil to the reservoir when the plunger is operated.

From the pump the oil is forced to three "headers" for



Plan of chassis, showing oil leads

distribution to the various bearings. These headers measure the quantity of oil going to each bearing. The controlling devices consist of small double-end plunger valves held in place by light spring pressure. An air bell is placed immediately above the plunger of each valve and the size of this air bell determines the amount of oil for the bearing.

Oil Kept From Bearing

As pressure is built up the plunger valve is forced from its normal position against the opposite seat, thus preventing any flow of oil to the bearing. With increasing pressure the air in the air bell is compressed by the liquid which flows in.

When the main pump is allowed to return to its normal position, the pressure is reduced and the plunger valve returns to normal position; the oil that has entered the air bell is then forced to the bearing by the air pressure in the air bell. Annealed tubes lead from each header to the various points of lubrication.

Thermal Expansion of Aluminum and Some of Its Alloys

AN investigation of the thermal expansion of aluminum and some of its important alloys has been made at the Bureau of Standards and the results are published in Scientific Paper No. 497, by Peter Hidnert. The paper gives data on the thermal expansion of four samples of aluminum and 51 samples of important aluminum alloys. The preparation, chemical composition and heat treatment are included. Most of the specimens were examined from room temperature to about 500 deg. C. Typical expansion curves of the various groups of samples are shown and discussed. In some cases the data on expansion were compared with the equilibrium diagrams of binary alloys. After the expansion tests, the changes in length from the original lengths were determined.

A description of the apparatus used in this research, and a review of available information obtained by previous observers on the thermal expansion of aluminum and some of its alloys, are given.

The following average equation

$$L_t = L_0 [1 + (22.58 t + 0.00989 t^2) 10^{-6}]$$

is given as the most probable second degree equation for the expansion of cast aluminum (99.95 per cent) from room temperature to about 610 deg. C. For the aluminum-copper alloys containing from 4 to 12 per cent copper, a figure is given which shows the relations between the chemical composition and the coefficients of expansion for various temperature ranges. The curves indicate maxima at 6 or 8 per cent copper.

The coefficients of expansion of aluminum-silicon alloys (4 to 12.5 per cent silicon) generally decrease with increase in the silicon content. Two normal 12.5 per cent silicon alloys exhibited certain peculiarities which were discussed. Duplicates of these alloys modified by the addition of 0.1 per cent metallic sodium did not show these phenomena.

Anomalous Expansions

The expansion curves of two aluminum-zinc alloys containing 77 and 95 per cent zinc, respectively, indicated anomalous expansions at constant temperature (about 270 deg. C. on heating), due to a transformation by the formation of β constituent. From the results of previous observers and the present research it is evident that the alloy

of eutectoid composition (about 79 per cent zinc) shows the greatest change in expansion at the transformation or eutectoid temperature, and that in alloys containing from about 35 to 99 per cent zinc this anomalous change decreases with decrease in the amount of eutectoid contained.

The addition of 1 or 2 per cent manganese (or 1 per cent manganese and 2 per cent copper) to commercial aluminum caused a decrease in the coefficients of expansion. The coefficients of expansion of the samples of aluminum-manganese alloys containing about 2 per cent manganese are generally less than those containing 1 per cent manganese.

Triangular Diagram

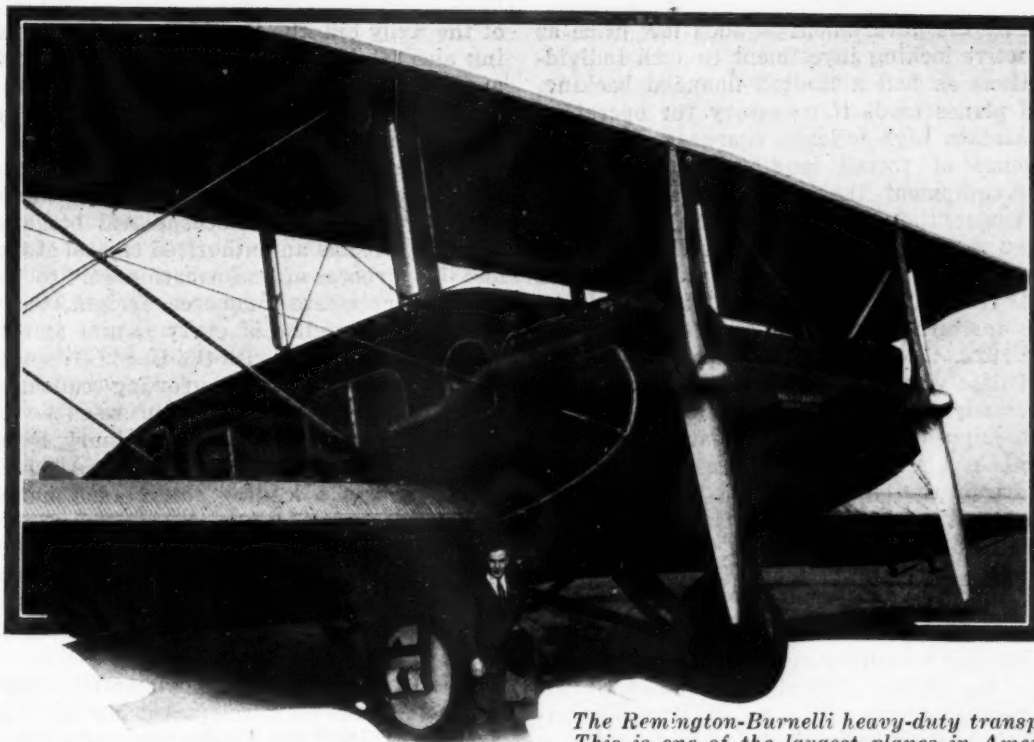
A triangular diagram is shown which indicates the effect of change of composition on the coefficients of expansion of aluminum-silicon-copper alloys lying near the aluminum corner of the ternary system. For the aluminum-silicon-copper and aluminum-silicon-copper-manganese alloys investigated (containing from 84 to 94 per cent aluminum) the coefficients of expansion decrease with increase in the silicon content. In general, the substitution of approximately 1 per cent manganese for a corresponding amount of aluminum in aluminum-silicon-copper alloys containing from 87 to 94 per cent aluminum caused a decrease in the coefficients of expansion.

The coefficients of expansion of a number of samples of duralumin in various conditions were derived. In hard-rolled alloys and duplicates that were heat treated the coefficients on second tests are less than those obtained on the first tests. For the heat-treated alloys the difference between the coefficients of the first and second tests is generally less than in the hard-rolled alloys.

The thermal expansion of cast "Verilite" (Al 95.5, Ni 1.5, Cu 1.0, Cr 1.5, Mn 0.5) between 14 and 302 deg. C. is represented by the following empirical equation:

$$L_t = L_0 [1 + (21.05 t + 0.01473 t^2) 10^{-6}]$$

In conclusion, a comparison of the average coefficients of expansion of the materials investigated are given for several temperature ranges in the following table. For values of individual samples over various temperature ranges (between 20 and 500 deg. C.) reference should be made to the proper sections of the paper.



The Remington-Burnelli heavy-duty transport. This is one of the largest planes in America, having a carrying capacity of 20 to 25 passengers, exclusive of the two pilots. It is of all-metal construction.

Commercial Plane Production in U. S. Approaching 1500 a Year

Survey indicates that approximately 3000 aircraft for business flying will be built here in next two years. Manufacturers also see demand for 600 engines during that period. Industry growing

By Athel F. Denham

WITH ten aircraft manufacturers reporting a total production for commercial use during the first half of 1925 of 140 airplanes and five aircraft engine builders having a production for the same period of 155 engines, a point seems at last to have been reached where a definite relationship exists between the number of planes being put into commercial use and the number of planes turned out by the various manufacturers. Although hundreds of airplanes have been in actual commercial operation since the end of the war, there has not been, until this year, any real production of commercial flying equipment.

A survey made last month by *Automotive Industries* indicates that quantity production of aircraft is at last impending. Out of 39 manufacturers to whom were sent questionnaires regarding their estimated production of the next two years, 12 reported an estimated production of nearly 2700 planes and approximately 375 engines for commercial use during that period. Taking into consideration those companies which are active in the commercial field and covering which detailed data are not available, aircraft production during the next two years seems likely to

total somewhere around 3000 planes and 600 or more engines.

To appreciate properly the present situation in the aircraft manufacturing industry, a brief review of commercial aviation from 1919 to 1924 is necessary. Following the war period, a great number of surplus planes and engines were sold by the U. S. Government to private companies who, relying upon the curiosity of the public, believed that there was an immediate future for commercial flying, especially as to passenger transportation. The novelty of airplane travel caused a gradual increase from 1919 of the number of these small companies operating short air lines until in 1922 a maximum of 450 aircraft were employed by 129 companies operating from a fixed base. This figure, of course, excludes itinerant or "gypsy" fliers who, in the post-war years were numbered by the score, but who at the present time have practically disappeared. The disappearance of the "gypsy," it may be remarked in passing, is almost certain to affect favorably public confidence in commercial flying, because of the 91 accidents occurring during 1924, 89 occurred with planes operated by "gypsy" fliers.

Although sold by the government at such low price as to form an attractive looking investment to such individuals or corporations as had a limited financial backing, these antiquated planes made it necessary for operating companies to maintain high mileage charges. With the frequent recurrence of forced landings and accidents involving loss of equipment, the high rates charged and irregularity of service, the withdrawal of the support of such organizations as the National Aircraft Underwriters Association and the fact that limited finances prevented the small operator from investing in more up-to-date flying equipment, these operating companies gradually went out of business after 1922. In 1924 only 60 companies operating from a fixed base were in existence. Of these many have indicated already that operations will be suspended, until they have re-equipped with more up-to-date and reliable aircraft. Nevertheless, with the widespread interest in aviation, kept alive by the daily press, the public has remained convinced that rapid communication by air was being commercial.

Slump Was Experienced

While passenger transportation was thus developing from 1920 to 1923 the manufacturers were experiencing a decided slump. Up to the end of the war practically all of the aircraft manufacturers relied on government contracts to keep their business alive and profitable. A few planes for commercial use were turned out here and there on special order but no definite production program along these lines had been set. At the end of the war and with the institution of the government economy program, contracts for aircraft for the government fell to a minimum and some of the companies which had done a highly profitable business during the war and had spent considerable money in aircraft and engine development went into the hands of receivers for lack of orders as they were unable to compete in price with the surplus stock being sold by the government to commercial users. The end of 1923 found probably two-thirds of the capital invested at the close of the war wiped out or driven out of the aircraft industry.

The U. S. Government, as compared with foreign powers, had been notably lax in aiding the development of commercial aviation. In Europe, air lines are heavily subsidized they are operated, organized, and inspected according to air laws and they have had the use of public terminals, signals and weather information. Until 1924 the U. S. Government took no steps to aid similarly the development of commercial aviation. The Post Office Department, it is true, had since 1921 been working on plans for establishing air mail service but these plans had not advanced materially beyond the experimental stage until 1924.

The Situation at End of 1924

The end of 1924, then found the aircraft industry in a position where it had to further commercial operations on its own initiative or fail. A special committee of the aircraft industries was formed to draw up plans and co-operate with the U. S. Government in the development of commercial aviation. Due considerably to the efforts of this committee, an air mail bill, known as the Kelly Bill, passed the House and Senate and was signed on February 2, 1925 by the president. Section 4 of this bill states that the Postmaster General is "authorized to contract with any individual, firm or corporation for the transportation of air mail by aircraft between such points as he may designate." Congress had previously appropriated \$2,750,000 for air mail development; this figure to include the cost of delivering and operating a night air mail service so as to make through air mail service possible between New York and San Francisco and intermediate points. After the passing

of the Kelly bill, the Post Office Department, while preparing and establishing night operations between New York and Chicago, asked also for bids from individuals, groups and organizations desirous of carry mail by air.

One important organization which was formed thereupon was the National Air Transport, Inc., organized in Chicago early in 1925, by a group of the leading aircraft and aircraft engine concerns and bankers interested in aviation. It has an authorized capital stock of \$10,000,000 and the purposes of its formation were to "transport by aircraft in interstate commerce, freight, securities and articles of merchandise of every nature and description, and mail under contract with the U. S. Government." Another development, showing the growing realization of the importance of aerial transportation was the formation of a private operating company by Henry Ford, using planes manufactured by the Stout Metal Aircraft Company, of which he was a leading stockholder and which company he finally purchased outright in August of this year. Air mail bids from other sources also have received and if these bids are accepted, the present air mail line between New York and San Francisco will become an air mail belt with branches extending 1000 miles north and south of the trunk line.

Two other branches of commercial aviation which have undergone unusual development during 1924 and the early part of 1925 are the applications of airplanes for photography and agricultural purposes. At the present time aerial photography is perhaps the best paying type of commercial aviation, gross sales in aerial surveying having advanced from \$30,000 in 1919 to half a million dollars in 1924, and, conservatively estimated to more than \$1,000,000 in 1925, with such companies as the Fairchild Aerial Surveys, Inc., Hamilton Maxwell, Inc., and Underwood & Underwood with their large financial backings, important factors in the field. It has been shown conclusively that mapping by aerial photography reduces expenses considerably and increases accuracy.

Crop Dusting by Airplane

Along agricultural lines, the Huff Daland Duster, Inc., has developed an excellent business during the past six months. The company uses planes manufactured by Huff, Daland & Co., of which it is a subsidiary, the planes being specially designed for low flying and crop dusting from the air. During the past season it has serviced 30,000 acres with from three to five applications per acre. By the use of airplanes the cost to the farmer of dusting has been actually decreased, according to some figures, by as much as 25 per cent. Eighteen specially equipped planes are used in this service and the territory covered extends to practically all parts of the south.

The biggest future field for commercial aviation, however, seems to be air transportation by plane of mail, express, freight, and to some extent of passengers; and it is along the lines of cargo carrying and mail planes that the greatest advances have been made. The load-carrying efficiency of the so-called cargo type has not only increased 1000 per cent over its war-time prototype but, according to H. K. Wetzel, Vice-President of the Douglas Co., now has a structure that is, comparatively speaking, far more rugged than even the very best motor truck produced. Considering that the most modern planes of cargo type are built with a factor of safety of 7 or over, this statement is not without foundation.

During the past four years, the Douglas Co. has produced 89 cargo ships for the U. S. Government and not a single fatality has so far been recorded with one of these planes. The latest Douglas commercial plane was described in *Automotive Industries* of September 10, 1925.

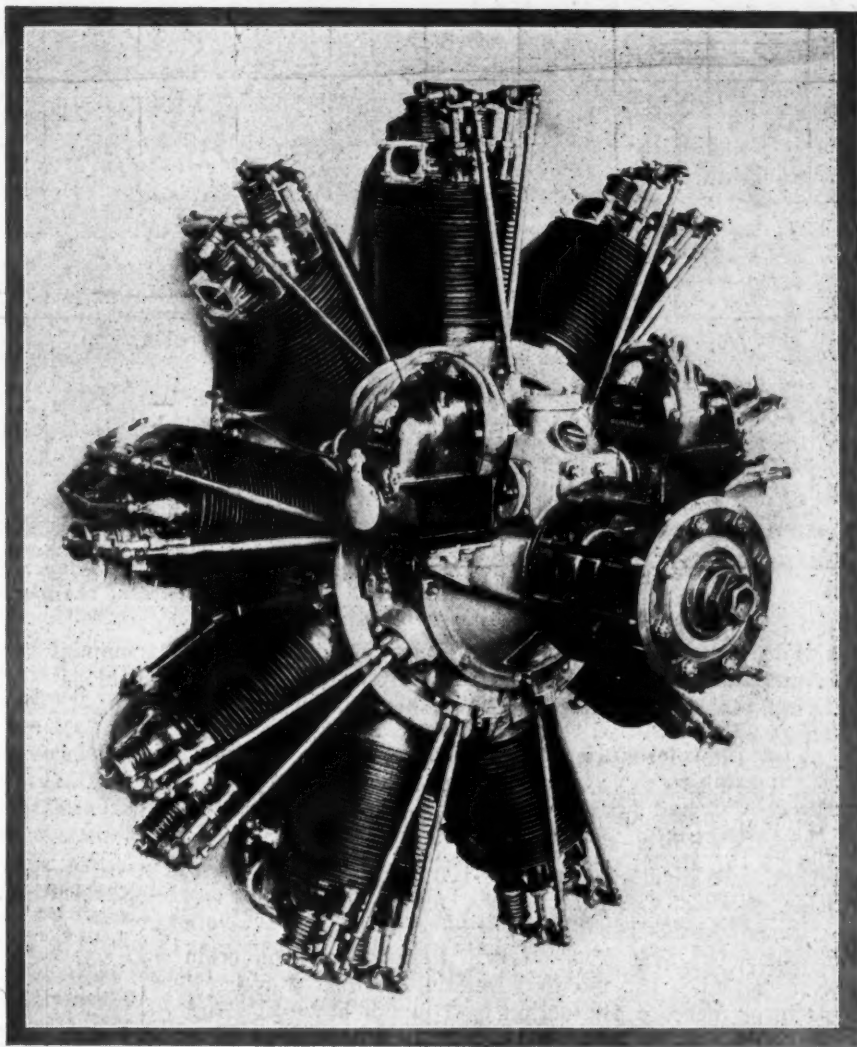
Although the growth of passenger traffic is in a way dependent on the establishment of a network of cargo lines, its development is necessary in order that it may keep pace with that of freight lines and may be superimposed on them. In contrast to the large number of small operators who have failed in the past few years there are a few companies which have been highly successful in passenger and freight transportation, notably among which is the Curtiss Exhibition Co., a subsidiary of the Curtiss Aeroplane and Motor Co., which during 1924 flew 100,000 miles and carried 3400 passengers to points as far distant as 1000 miles from New York; and the Aeromarine Airways Corp., which covered 37,500 miles and carried 2,500 passengers and 1000 pounds of freight. The Aeromarine Corporation is at present re-equipping.

Future Looks Bright

That the manufacturing end of the aircraft industry has at last a hopeful future is evidenced by production figures. At the end of 1924 there were available for commercial use only 217 planes. Reports received last month from 10 aircraft manufacturers alone show a total of 140 planes sold for commercial use within the first six months of 1925. Although figures include planes from army and navy war-time stock bought and resold by aircraft manufacturers, they should not be compared with the out-of-date equipment used in past years by most of the smaller operating companies and practically all the itinerant flyers. These planes have been supplied with new types of wing sections, stream lining has been improved and a number of other changes have been made to increase their aero-dynamical efficiency and structural reliability.

In the aircraft engine field the Wright Aeronautical Corporation is one important company which has been supplying engines of up-to-date designs in quantity to commercial users. Since January 1, 1925, this organization has sold 48 J-4 radial 200 h.p. air-cooled engines, 3 radial 60 h.p. air-cooled engines and 3 water-cooled 600-675 h.p. water-cooled engines to non-government buyers. It is quite probable, however, that for some time to come, at least until the end of 1925, aircraft engine manufacturers will not be called upon to turn out all the engines required for either the re-designed army stock or all the new planes.

There are still a great number of Liberty motors and Curtiss OX-5 motors in existence which, due to the low prices at which they are sold by the government, can be rebuilt and improved and resold at less than the manufacturing cost of more up-to-date engines. The supply of these engines, however, is not inexhaustible and before the end of 1926, if the present production plans of the various airplane manufacturers and operating companies mature, aircraft engine builders will be called upon to supply aircraft engines in large quantities for commercial use. Estimates of commercial planes to be produced during the next two years, as totaled up from the reports of 14 aircraft manufacturers are in the neighborhood of from 2500 to 3000 airplanes. While these estimates may possibly be too optimistic, they do show that aircraft manufac-



The Wright J-4 1925 model, radial air-cooled 200 hp. engine, which has a guaranteed maximum weight of 480 lb. and a fuel and oil consumption guaranteed not to exceed .55 and .025 lb. per hp. per hour respectively. It has a bore of 4.5 in. and a stroke of 5.5 in. It was developed for commercial purposes

turers on the whole are at last visualizing a future for their industry and are expanding their facilities to take care of increased production.

New Plants Being Built

Not only are the number of commercial planes increasing, but plants are being built, backed by important financial interests for the purpose of turning out purely commercial planes. Many of these concerns have their own operating companies, and few of them count heavily on government contracts for their business. While some of these companies are rebuilding war-time planes, showing the way towards methods of production in quantity of commercial planes selling at a reasonable figure, others, are designing planes from the ground up. One of these, the Alexander Aircraft Co., a subsidiary of the Alexander Industries, is starting production on commercial ships which are to sell at \$2475 at the factory. The Buhl-Verville Aircraft Co., Detroit, is another new company which has been organized for the manufacture of commercial planes. It is also reported that G. H. Fokker is planning to establish a \$2,000,000 plant at Kansas City, where, according to various reports, he expects to turn out a thousand planes during the first year for commercial use.

Of the older companies, Curtiss so far has taken the lead in turning out ships for commercial use. From the



One of the 18 ships used by the Huff Daland Dusters for spraying crops in the South. Note the unusually low angle of incidence of the plane

1st of January to the middle of July this company had sold 70 complete airplanes and had manufactured 25 new rate is 8 planes and 2 engines per month.

Producing Three a Month

The Swallow Airplane Company has sold, since the first of January, 20 complete aircraft, its present production rate being three a month. This organization estimates its production as 60 planes in 1925 and 100 planes in 1926. The Yackey Aircraft Co., another new concern, has turned out 16 planes and has rebuilt 39 rotary engines into a radial type since the first of January. Its present production rate is 2 planes per month. During the next 2 years it expects to increase production to 2 planes a week. Huff Daland, which has turned out 18 planes for its subsidiary, the Huff Daland Dusters expect to add 40 planes during the next year. This company also is under contract to the army for which it is building 6 planes at present. This company is moving to a new \$200,000 factory at Bristol, Pa., where it is installing the latest type of equipment for turning out planes in quantity.

Another manufacturer of airplanes connected with a large automobile manufacturer has turned out five cargo planes and 25 engines since the first of January. Its present production rate is two a month and it expects to build 75 ships during the coming year. Another new concern, the Woodson Engineering Co., whose plane was described in *Automotive Industries* of August 27, 1925, has turned out two planes since its recent inception. Its factory is equipped for an estimated production of two planes per month in 1926.

The Aerial Service Corporation which produced the "Mercury" for the night air mail service between New York and Chicago, expects to build about 20 to 25 planes of this type in the next two years. Another eastern manufacturer of airplanes expects to turn out 150 planes in the next two years, two planes having recently been turned out by them. The Sikorsky Aero Engineering Corporation, whose plane was described in *Automotive Industries* of April 2, 1925, is at present working on three new planes. This company expects to build 21 more planes during the next two years and is working out plans for the construction of a five-engined plane with a carrying capacity equal to the ill-fated Shenandoah.

Following is an outline of the production of some of the

companies which are at present active in the commercial field:

Company	Planes sold Jan.-July 1925	Engines sold Jan.-July 1925	Present Production Rate Per Month	Estimated Production for Next Two Years	Notes
Aerial Service Corporation	1		Experimental	20-25 Planes in 2 years	
Aircraft Development Corp.				Do not manufacture at present	Spend \$50,000 per year on experimental work.
Alexander Aircraft Co.				720 planes	Planes to sell at \$2475. New Company.
Boeing	1				
Buhl Verville Aircraft Co.				First craft in production	
Curtiss Aeroplane & Motor Co.	71	25	2 engines 8 planes	240 aero-planes	
G. H. Fokker				50 engines 1000 planes in first year	Still in paper stage.
Huff-Daland Aero Corp.	18			40 planes	
Sikorsky Aero Engineering Corp.	3			21 large transports	Designing a 5-engined all-metal plane
Swallow Airplane Mfg. Co.	20		8 planes	60 in 1925 100 in 1926	
Tips & Smith	4	12	5 engines	250 engines in 2 years	
Woodson Engineering Co.	2			Equipped for 2 per month, expect to expand to 4 per month in 1926	
Wright Aeronautical Corporation		54			
Yackey Aircraft Co.	16	39	1 twp-place 1 transport	2 per week—200 planes	
Companies' Names withheld by request	2	5	25	2 planes	150 in two years 75 ships the next year
	140	155	17 planes 7 engines	2687 planes 375 engines	

Educating Retail Salesmen—

A Properly-Planned Factory Correspondence Course Sometimes Does the Trick

Higher grade representatives an urgent need of the automobile industry and manufacturers face problem in working out a training system which will meet requirements

By Ralph Schrenkeisen

ONE of the greatest problems with which the automobile industry is faced today is the education of its retail salesmen. Other problems, seemingly more gigantic and insurmountable, have been met and solved and still this one, which is the direct key between the factory and the retail prospect is with us and is as embarrassing as ever.

Perhaps one reason that it remains unsolved is because of the abnormally large turnover of retail salesmen. It is a regrettable fact that the affections of these men are as variable as the winds in many cases. It is seldom that an owner, or a prospect, revisits a salesroom after an intervening period of several months and finds the same faces in the salesforce that were there on his previous visit. This may be due to the fact that salesmen, in their quest for the largest income they can earn, have formed more or less of a habit of following popularity waves. When they see that the public demand is switching to a make of car other than the one they are selling, they are quick to switch their affections to that make and will join its forces as soon as they get a chance.

Manufacturers have made varied attempts to educate salesmen, but undoubtedly this unstable condition of the sales forces has served to discourage them from a real one hundred per cent effort. To begin with, many plans that are really worth while, necessitates the outlay of such an enormous amount of money that one can hardly blame the manufacturers for balking at the expenditure. They have too often had the experience of educating salesmen to the tune of many thousands of dollars only to find that, after a short period of time, those same salesmen were busily engaged in selling a competitor's product.

Action of Some Kind Needed

Nevertheless, the fact remains that if the industry is to get away from the embarrassment of having its products poorly, or falsely, introduced to potential prospects it cannot afford to overlook the situation much longer. A friend of the author, who knew very little about automobiles, stated that he intended buying a certain make of car. Not many days after that, the author found him driving an entirely different make and, when asked the reason, the friend said that he had switched his choice because he had made up his mind to buy a car with a thermo-syphon cooling system because he had been told that that was better suited to certain conditions that his car would be subjected to. He didn't know it, but the car he had decided to buy in the first place was thermo-syphon cooled.

And because the salesman for that car didn't know it, either, the distributor and factory lost the sale.

It is just such instances as this, and others where the specifications of the car are known but where the correct manner in which to present them is not, that make apparent the necessity for some action on the part of manufacturers, regardless of any expenditure within reason.

The question then arises: What is the logical means to employ to successfully carry on this education? It is evident that the most effective method would be the factory sales school, at which all salesmen would be required to attend. This course, however, has several drawbacks. The amount of money involved runs into an enormous sum which the manufacturer feels he should not be expected to shoulder entirely, and in which the distributors and dealers are not willing to participate. Then, too, distributors do not look kindly upon hiring a new man and allowing him to spend the first month or so at the factory, away from the influence of the men with whom he will eventually have to work.

Traveling Instructors

A modification of the factory sales school, which is being practiced by some factories today, is the employment of special representatives who travel from the factory and hold sectional meetings at various points throughout the country. All salesmen who are within a certain radius are invited to attend these sessions. This method has not been entirely lacking in good results although its efficiency is retarded through the fact that, again, distributors are unwilling to release their men from their daily sales efforts in order to let them attend.

As a matter of fact, the manufacturer has been given plenty of reason for becoming rather indifferent in his efforts. It is discouraging to spend months in planning a campaign, as well as thousands of dollars in its execution, only to have it meet with but scant approval and indifferent acceptance, if any, by the distributors and dealers, and their salesmen. It is known that the average automobile salesman does not take kindly to learning. He has been selling cars in a quantity that has afforded him a fair livelihood and he sees no reason for not letting well enough alone. But, for that same viewpoint to be taken by his employers is a thing that is not understandable. They, without an exception, should be the first ones to lend full co-operation to the factory's efforts.

The mails have been used to advantage in educational movements and here, it would seem, is the logical place to

turn in future endeavors. There is the possibility that, if handled with caution both in regard to expense and to reading matter, the mails may be the means whereby the most good can be evolved. There are many phases, however, which have a bearing on the success of a mail educational effort and they must all be weighed cautiously as to their possibilities and impossibilities before any definite plan is decided upon.

There is the danger that whomever undertakes to pen the letters or mailing pieces will rob them of their force through verbosity in an attempt to make his offering a literary masterpiece. Salesmen will not read long, rambling notices, bulletins or letters pertaining to the factory's ideals and opinions regarding the car they build. Therefore any reading matter which is sent to them must, of necessity, be told in simple language and in as concise form as possible. A handbook in the form of a questionnaire would seem a logical method of meeting these requirements, but it is too obviously educational in its appearance and text and will meet with scant attention by those who receive it.

How Much Shall be Said

A great deal must be said to the salesmen, both in regard to the car and in regard to the correct method of merchandising it. The question in a mail effort, therefore, is whether this shall all be incorporated in one mailing, or whether it shall be divided and certain parts of it incorporated in separate mailings over a certain period of time. In the latter case, a decision must be reached as to just how much shall be embodied in each mailing and just how many of those mailings shall be sent. It is well to give due consideration to the enormity of such a program before taking any actual steps toward its consummation.

During the past year a certain manufacturer was considering a plan for the education of all salesmen actively engaged in selling his product. On the surface the plan looked, not only feasible, but also as though its productive results would be certain. After a preliminary consideration he called in a direct-mail specialist and recited his ideas to him. The specialist listened to his entire plan and at the end, spoke one word which placed it into discard forever. That word was—cost.

The manufacturer had been considering sending a daily letter to all salesmen. Each letter would have as its contents just one salient feature of the car, or one pertinent bit of logic regarding the merchandising of it. Thus far the idea had its merits. Each letter would be concise and to the point, and salesmen not only would read it but, if it were framed interestingly, would look forward to the next.

On the face of it, a letter a day does not seem to imply the expenditure of a vast amount of money, but taking into consideration the fact that there were approximately six thousand men employed in selling that car throughout the country, and that each letter would cost about six cents, the total cost quickly mounted to an annual sum in excess of one hundred thousand dollars. What seemed at the outset to be an undertaking of ordinary proportions, upon analysis was seen to be an extraordinary one in which the labor and expense would not be warranted by the results to be gained.

Cost Could be Kept Down

However, there is no doubt that a modification of the above plan could be made effective, and the costs kept within reasonable bounds. For instance, another manufacturer has a plan now in the process of evolution whereby a weekly letter, instead of daily, will be mailed to all salesmen selling his product. This will necessitate a greater amount of information being embodied in each mailing, but it will also cut the annual cost at least eighty per cent. Regardless of the contents of these letters, if the

story is told interestingly, with all attempts at education carefully disguised, it will be read. It is up to the individual writer of the contents to place himself in the position of a salesman and tell his story in a way that would get and hold his own attention.

A part of this weekly letter plan is to perforate the left edge of each letter and to supply the salesmen with a loose-leaf folder in which they may be filed. Then in order to insure that they not only be read, but reread, the factory will run a sales contest over the course of a year, with several sub-divisional prizes in order to keep interest at a maximum degree throughout the contest, in which the winner not only will have to sell the greatest number of cars, but will have to make a report with each sale, telling which letter of the series helped him to consummate it and what the feature of the letter was. Not only will this prompt the salesmen to absorb the contents of the weekly letters as they are received, but it will compel them to refer back to them at intervals in order to make out their reports in conformation with the rules of the contest.

Another means of attaining good results is for the factory sales manager to prepare a weekly address to be delivered to the salesmen by the sales managers of the branches, distributors and dealers. The only flaw in this program is the fact that many dealers are too small to warrant the maintenance of a sales manager—in fact, many dealers are so small that they are their own entire sales force—and in this way the good is reaching only the larger establishments. This means that the job is being only half done for, in the majority of cases, it is the little fellow who needs the education most.

Solution Still Missing

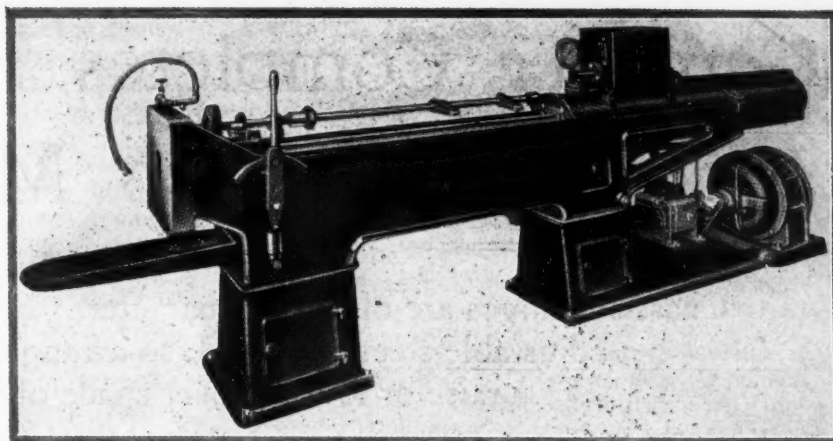
In spite of the several attempts mentioned, the need for salesmen's education is still unfilled. It is a subject that is worthy of the time and attention of every factory official, regardless of his title or position. When we see salesmen for cash registers, and other articles even at a lower price, receive the most thorough education before they are allowed to come in contact with the public, and then realize that an automobile salesman often is allowed to flaunt his incompetence, and often ignorance, in the face of those whom he is trying to sell we are moved to make the assertion that the pages of this magazine are open to any method that will relieve the situation.

Nothing will gain the confidence of the prospect, or increase the dealer's volume, so quickly as will the impression that the salesman knows what he is talking about.

THE automobile has supplanted the camel caravans on the Syrian desert and this difficult barrier to trade has been transformed into an important highway of commerce and travel, according to a dispatch recently received by the U. S. Department of Commerce from Consul Gregg Fuller at Teheran, Persia. Along the old routes where two years ago only the camel caravans could safely travel, scurrying American motor cars are now making their regular trips from Aleppo to Bagdad, from Bagdad to Beirut, from Beirut to Damascus and by stations with a precision and dispatch that is looked upon as a harbinger of a new era of commercial and economic development.

The trip from London to Bagdad can now be completed in seven days instead of 22 to 25 days as formerly. Business men can reach the Persian Gulf from Europe in one-third the time previously required. Not only has the desert routes made it easier for the East to reach Europe and the European countries to administer eastern governments, but it has joined more closely together the Moslem world.

The new LaPointe hydraulic broaching machine which has constant quick return speed of 60 f.p.m.



Hydraulic Operation of Broaching Machine Gives Great Flexibility in Cutting Speeds

Ram has quick return speed of 60 f. p. m. Pressure supplied by variable stroke, multi-cylinder pump. Bed design is improved

HYDRAULIC operation of the new No. 4-W broaching machine made by the J. N. LaPointe Company of New London, Conn., is arranged to provide a wide range of cutting speeds with a quick return speed of 60 f.p.m. for the ram. As illustrated, this machine has a characteristic LaPointe appearance although the details of the bed construction have been improved at the juncture of the bed and the cylinder. Either countershaft or direct electric drive may be applied 60 hp. at 600 r.p.m. being recommended in either case.

As illustrated, a heavy cast iron cylinder of 8 in. internal dia. is mounted in the rear end of the frame and bolted at its forward end to a cross piece which is integral with the frame. At a pressure of 900 lbs. per Sq. in. which is the recommended maximum for which the relief valve in the pump is set, a pull of 43,000 lbs. is exerted at the draw rod. Pressure is supplied by a variable stroke, multi-cylinder hydraulic pump which is provided by the Waterbury Tool Company. The stroke of the draw rod is 64 in. and the speed is controllable from practically zero to 24 f.p.m. on the working stroke with a constant return speed of 60 f.p.m. The working speed is controlled by a nut near the left end of the control rod running along the top of the cross head ways. This rod, as shown, also carries stops for limiting the travel of the broaching drawhead and with the hand lever shown in the front provides complete control for the machine. A system of linkage at the back of the machine has been designed to connect the control rod with the pump control.

Oil By-Passed on Return Stroke

Valves are arranged at the connections on the cylinder so that the oil which produces the pressure is transferred from one side of the piston to the other and during the return stroke a great share of the oil is by-passed. On the return stroke oil is forced into the draw rod and there-

fore works against a relatively small diameter to produce the rapid travel which is an outstanding feature. The boxlike reservoir above the cylinder accommodates the excess oil which appears during the working stroke due to the fact that the piston rod reduces the total volume on the forward side of the piston. Connections are arranged so that the relief valve of the pump also discharges into the reservoir at the top. The supply reservoir for the hydraulic system is located in the rear pedestal while the coolant is contained in the pedestal at the work head. As the machine is fitted with high and low pressure relief valves and the reservoir is at the highest point of the system, all the air is evacuated from the hydraulic line at every cycle of operation.

Stops of Spring and Plunger Type

The stops on the control rod are of the spring and plunger type and can be varied in location without the need of wrenches. The length of stroke can be varied while the machine is in operation or standing idle. When required the rate of feed can be locked to prevent tampering. The hole in the face plate is 5 in. dia. and the drawhead can be adjusted through a range of 1½ in. both above and below center. The drawhead is fitted with bronze shoes which reduce wear on the ways of the machine and insure better alignment. Greater coolant capacity than in previous models has been obtained by the installation of a larger coolant pump which is connected to the outlets at the work head by a flexible hose of ½ in. pipe size.

Standard Equipment includes the hydraulic pump and motor although machines can be arranged for belt drive. One reducing bushing which fits the bore in the face of the machine and one pull bushing are also included with the standard machine. The weight is 7600 lbs. The floor space requirement is 15 ft. x 25 in.

Gardener Completes Line for 1926 With Two Models

Chassis changes are of minor character. Foursome Roadster has an adjustable steering wheel, so arranged that driver can raise or lower it over space of two inches

GARDNER Motor Company's 1926 line as finally rounded out contains thirteen different units mounted on the six and eight-cylinder chassis. Six of these units, designated as Model 6-A, are on the six-cylinder chassis while seven of them, designated as Model 8-A, are on the eight.

The 1926 line, besides including Gardner's Fiftieth Anniversary Sedan, which was introduced about a month previous to formal announcement of 1926 models, takes in one new body type on both chassis, the Foursome Roadster, and a five passenger brougham on the six. The Foursome Roadster on the six lists at \$1595 f. o. b. factory while the one on the eight lists at \$1995. The new brougham on the six lists at \$1495.

As now constituted the Gardner line is as follows:

Model 6-A (six cylinder)				
Ship Wt.	Pass.	Body Style	Price	
3070	5	Touring	\$1395	
3200	5	Brougham	1495	
3210	4	Foursome Cabriolet	1845	
3030	4	Foursome Roadster	1595	
3280	5	Anniversary Sedan	1595	
3300	5	De Luxe Sedan	1895	

Model 8-A (eight cylinder)				
Ship Wt.	Pass.	Body Style	Price	
3350	5	Touring	\$1995	
3510	5	Brougham	1995	
3480	4	Foursome Cabriolet	2245	
3350	4	Foursome Roadster	1995	
3620	5	Anniversary Sedan	1995	
3620	5	Sport Sedan	2295	
3600	5	De Luxe Sedan	2495	

Save for the appearance of the new body types mentioned, the only changes in the 1926 Gardners are in minor refinements and a wider choice in colors. With the eights the company now is furnishing an ornamental radiator emblem in the form of a silver Griffin which is featured in the Gardner coat of arms. The emblem has proved quite popular with dealers since it was first brought out and there have been many calls for it on sixes, on which models, however, the emblem is not offered as standard equipment.

Reducing Closed Car Prices

The Gardner product, generally speaking, remains substantially as it was, the big element in the factory's 1926 program being to bring the price of the closed car down more to the level of the open car price without making a sacrifice in closed car quality. The company's Anni-



The new Gardner 5 passenger brougham on Model 6-A (six cylinder) chassis. The list price of this job is \$1495

versary Sedan on the eight now lists at the price of the eight touring. The five passenger brougham on the six lists at just \$100 more than the six touring.

The five passenger brougham which now appears among the Gardner sixes is a short-coupled four-door body job having a full front seat instead of the divided seat. The finish is two-tone lacquer. Trimmings are ribbed velvet. Hardware conforms to the standard obtaining in Gardner's highest priced jobs.

One-Piece Windshield

There is a one-piece windshield operating with a rotary lift, a satin rear window curtain and other modern features. The rear end of the front seat is cut away to provide extra leg room.

Equipment going with the five passenger brougham is as follows: Automatic windshield wiper, cowl lamp, nicked radiator, balloon tires, natural wood wheels, trunk rack, dome light, rear vision mirror and a transmission lock.

One of the interesting features of the Foursome Roadster, which is offered on either the six or eight chassis, is its adjustable steering wheel, so arranged that by use of a wrench the driver can easily raise or lower the wheel over a playing space of two inches. This makes it possible for the driver to elevate or lower the wheel when it interferes with clear vision of the road ahead and to fix the position of the wheel for purposes of greater comfort and convenience. Gardner finds that the feature has a strong merchandising appeal.

This roadster also has a two-tone finish, nicked radiator, nickel-trimmed lamps, cowl lamps, five Distel wheels and a spare tire, snubbers all around, bumpers front and rear, nicked windshield frame. There is a rumble seat

and the top can either be let down or entirely removed at the driver's discretion. The upholstery of both the front seat and the rumble seat is in machine buffed Spanish leather in a color to harmonize with the body finish. There is a compartment behind the main seat for the storage of tools and light luggage.

Gardner's Anniversary Sedan, which, as previously stated, was really introduced some time before the formal announcement of the 1926 line, is proving the outstanding body of the entire list from the standpoint of popularity. This applies both to the six and the eight. The unit has been extensively described previously in this magazine and the trade is more familiar with it likely than with the other later Gardner additions. Standard equipments with the model are as follows: Transmission lock, snubbers, front and rear, balloon tires, Distel wheels, automatic windshield wiper, stop light, large nickel-trimmed lamps, indirect non-glare lighting, cowl lamps, one-piece ventilating windshield operated by rotary lift, cowl ventilator, rear-vision mirror.

The Gardner Company's production at present is running nearly 90 per cent closed cars although there is a big demand for the Foursome Roadsters. The company looks for no tapering off in production until about November 1. September will go down, it is said, as the biggest month of the year. The big sales stimulus of the season is said to have come through the popularity of the eight-in-line cars in addition to the influence of intensive national advertising. Production has increased at the Gardner plant steadily since last April.

New Lubricating Devices

Front wheel brakes have been the cause of lubrication troubles on certain European cars taking part in competition. Under momentum the oil is carried into the front part of the crankcase and tends to flood the front cylinders when the brakes are applied rapidly. This displacement of the oil leaves the pump dry a sufficient length of time, under certain circumstances, to cause the bearings to seize and other damage to result.

On the new Corre la Licorne engines a device patented by Engineer Causan is employed to avoid this defect. The oil pan is isolated from the engine crankcase, except for two oil return channels, one at the front and the other at the rear, each one fitted with a metal float. When the oil level is increased abnormally, either by deceleration or by the inclination of the engine on a gradient, the float is raised and shuts off the connection from the oil pan to the crankcase. The usual gauze filter extends the full

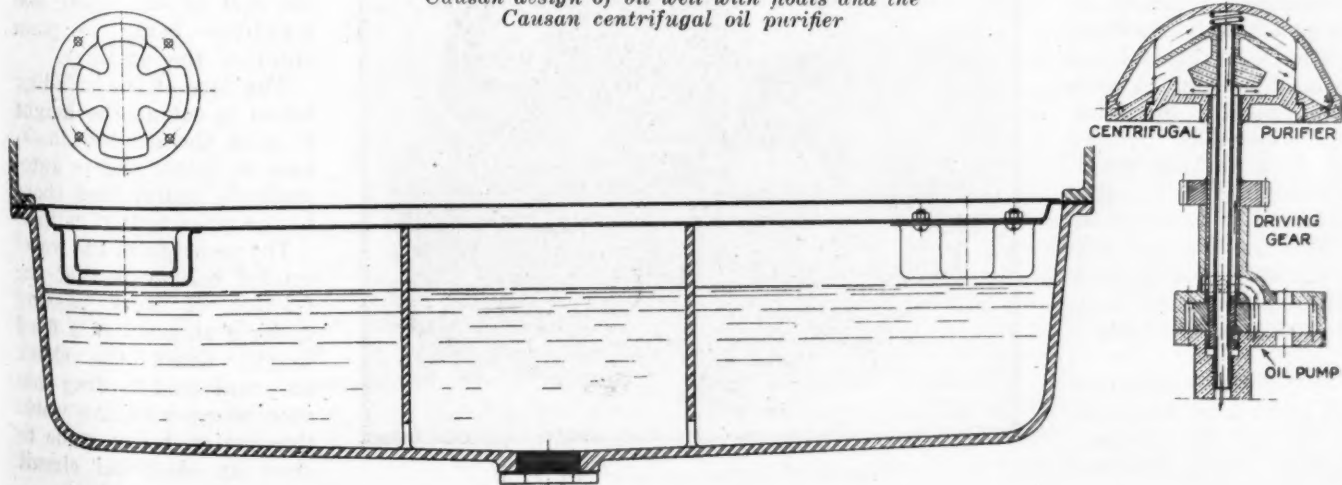
length of the crankcase and below this is an aluminum sheet with the two float chambers attached to it. The device effectively prevents oil shooting away from the pump and the flooding of the end cylinders.

Adoption is also being made of oil purifiers. Renault has made a centrifugal oil filter a standard equipment on his bigger machines. Causan has also taken out patents for an oil purifier designed to be driven off the oil pump shaft, in which centrifugal force is made use of to separate heavy particles of foreign matter from the lubricating oil. The device is shown in the illustration.

IT would hardly be a commercially practicable undertaking to publish a technical treatise on motorcycles for American engineers and students, for with the comparatively small number of firms in our motorcycle industry the demand for such a book would be exceedingly limited. England, of course, has a much larger industry, at least on the basis of number of manufacturing firms, but there, too, the demand for such a book does not seem to have been sufficient to induce anyone to compose it. Thus there is no technical work on motorcycle construction in the English language at the present time. This probably will add to the interest of our own motorcycle specialists in a new edition of a German work on motorcycle design, *Das Motorrad und seine Konstruktion*, by Kurt Hanfland, published by M. Krayn, Berlin W., at 38 marks, which has recently made its appearance. Hanfland is a practical motorcycle designer himself, and the fact that a new edition of the work should have become necessary several years after its first appearance is undoubtedly a recommendation.

The book covers the whole subject of motorcycle design in a logical and interesting manner. The history of the machine is briefly traced from the boneshaker or draisine of 1815 to the present, and numerous simple sketches are given showing the arrangement of frame, wheels, motor, etc. Each of the components of the complete machine is considered separately, the points governing its design being discussed and examples illustrated and described. As not only the chief components but also such engine accessories as ignition equipment, carbureters and oilers, as well as motorcycle fittings, such as speedometers, lamps, signalling apparatus, etc., are discussed, the book runs to considerable bulk, there being over 600 pages with about 700 illustrations. Although German constructions naturally are represented most prominently, designs of other nationality are not neglected, and among the plates bound in at the end of the book are included assembly views of the Cleveland, Indiana and Henderson power plants.

Causan design of oil well with floats and the Causan centrifugal oil purifier



Wide Range of Sizes Are Handled on New Surface Grinder

Accurate machining of large pieces by surface grinding is made possible by giant vertical spindle machine developed recently by the Blanchard Co. Operation is described in convention paper

AT the recent Steel Treathers Convention in Cleveland a paper on recent development in surface grinding machines using a cup type of wheel was presented by Henry K. Spencer, general manager of the Blanchard Machine Co., Cambridge, Mass. One line of development referred to has extended the field of the process to large pieces while another has greatly reduced the cost of surface-grinding small parts.

The application of surface grinding to the accurate machining of large pieces is now possible by the use of what is probably the largest vertical spindle surface grinder ever built. Its total weight is over 20 tons; the wheel head alone weighs $3\frac{1}{2}$ tons and carries either a 60-hp. or an 80-hp. motor directly on the spindle; the magnetic chuck is 5 ft. in diameter, and the maximum swing for the work is 7 ft. The grinding wheel is either 30 or 36 in. diameter and the base holds 500 gal. of coolant.

Placed on Rotary Chuck

The work is placed on the rotary chuck and held magnetically, or in a fixture. The chuck is then moved horizontally to bring its center just under the rim of the grinding wheel. The chuck is then rotated at a slow speed and the grinding wheel is gradually fed downward upon the work until it is reduced to the required thickness. The wheel and work are flooded with water, this cooling being so effective that even hardened steel is successfully ground at a rate that considerably overloads the 60-hp. motor.

Limits of 0.001 in. can be readily maintained on this large machine, sides of large pieces being ground parallel to within 0.001 in.

Sometimes grinding is used as a purely finishing operation. An example of this machine applied to a purely finishing operation is an automobile cylinder block, $30\frac{3}{4}$ in. long, which has been milled, drilled, etc., and comes to the grinder for finishing top and bottom surfaces, $1/64$ in. stock being removed from each. The production is 32 blocks per hour.

There are also numerous small parts most economically finished by surface grinding, some hardened

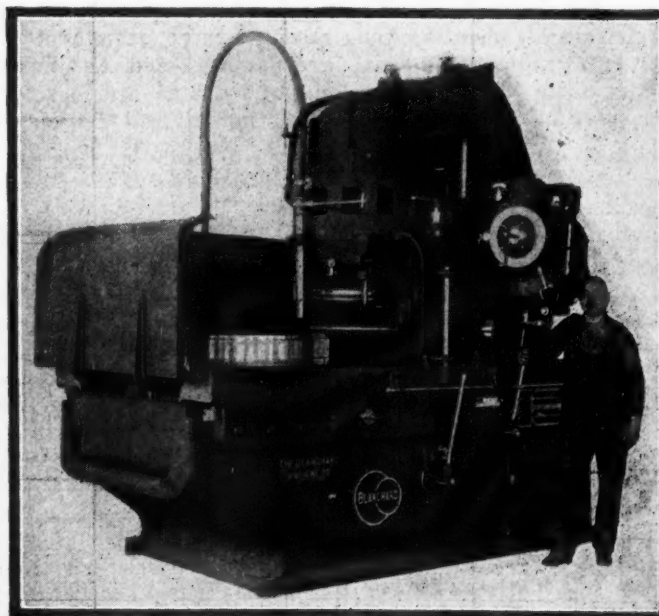
pieces, such as ball bearing rings, thrust washers and cutter teeth; and others soft, such as small drop forged and cast parts. Most of these small parts must be finished on two parallel faces to a definite thickness.

The Blanchard Automatic surface grinder finishes one surface in one pass under the wheel and the work passes through in a continuous procession. The rotating chuck serves as a conveyor for the work from the loading position, under the grinding wheel, under the wheel control caliper, and to the unloading point. The chuck face is 30 in. outside diameter and 18 in. inside diameter, giving a working face 6 in. wide in a radial direction. This chuck, called the Single Pass Type, is magnetic, but in a peculiar way. Slightly more than one-half of its area is not magnetized, while the rest is magnetic. This localized magnetism is produced by stationary electro magnets located under the moving chuck body, magnets being placed where magnetic hold is needed. The chuck body is sectionalized by radial slots, which are filled with brass to make a continuous and smooth working surface. The operator places pieces on the chuck as it passes by him, and after it has carried them a short distance it becomes magnetic and remains so under the grinding wheel and the caliper. The chuck completely loses its magnetism just before the pieces reach the unloading plow, a bar placed to guide the pieces off the chuck. To grind the second side the work must

be put through the machine again in the same way. Only the grinding wheel and the portion of the chuck immediately under and adjacent to it are enclosed by water-guards; the rest of the chuck and machine being in plain sight of the operator.

The face of the grinding wheel is set at the height to give the desired thickness of work, and is automatically maintained there by the wheel control caliper.

The principle of the wheel control caliper is that the friction of work passing under a shoe set at a fixed height above the chuck face will tend to drag this shoe along with the work, this action being made to close an electrical circuit



Blanchard surface grinder No. 27 R

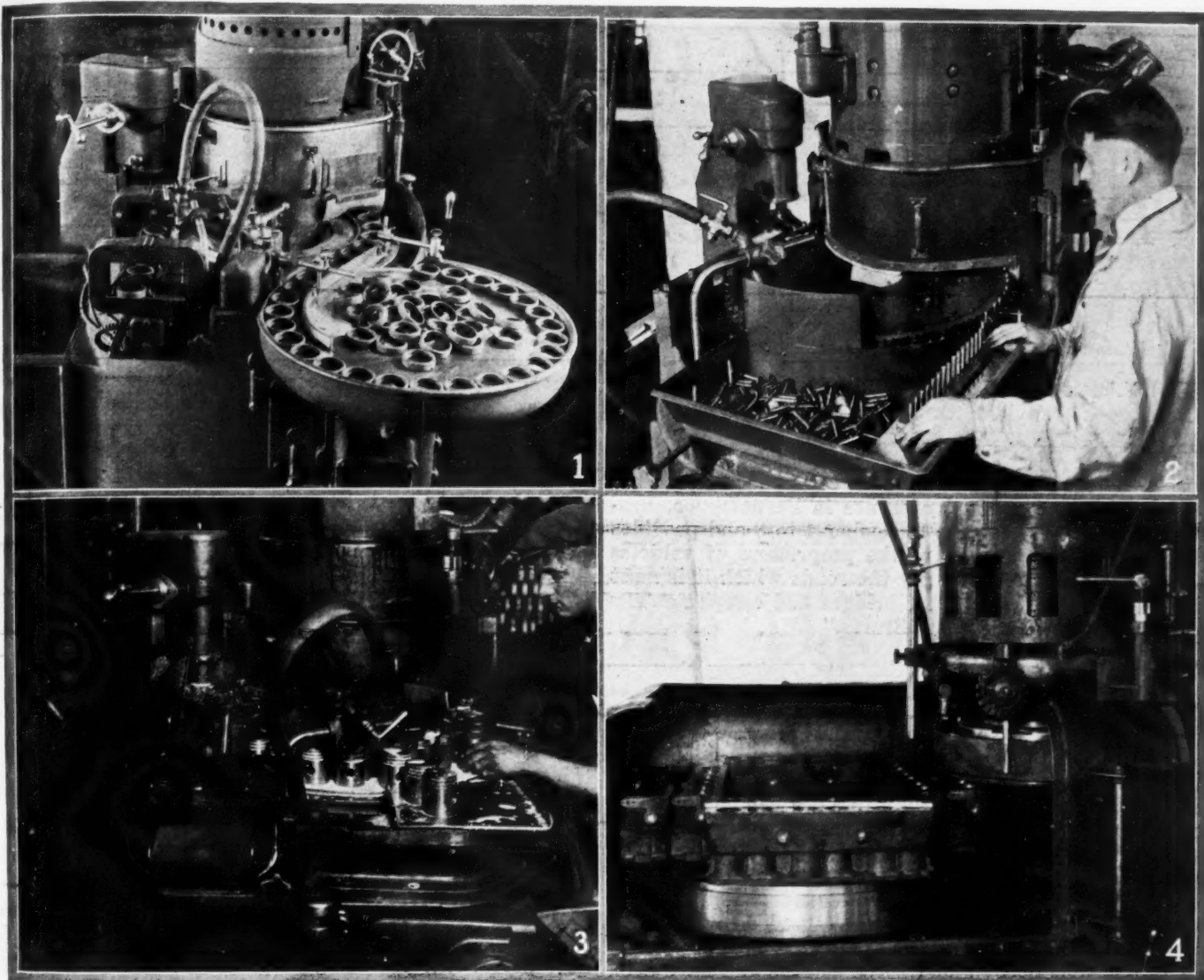


Fig. 1—Ball races on dial loading device of automatic grinder. Fig. 2—Valve tappets on automatic grinder. Fig. 3—Grinding cast iron piston tops. Fig. 4—Grinding top and bottom surfaces of cylinder blocks

controlling the feed mechanism of the grinding wheel.

The action of this device is as follows: The pieces are ground to a thickness determined by the height of the wheel face above the chuck. The wheel face gradually wears away, consequently the pieces come gradually thicker and thicker. The caliper shoe is set to the desired thickness, say, 1 in. above the chuck face. When the pieces are exactly 1 in. thick, they touch the shoe but do not create appreciable friction. Soon, however, pieces come through which are possibly 0.0002 in. oversize. The caliper shoe is so mounted that this slight increase causes friction enough to drag it along with the work, which slightly rotates the caliper spindle and establishes a contact. Immediately the feed magnet unlocks the feed mechanism, and the wheel is moved downward by steps of 0.0001 in. or 0.0002 in., several such steps occurring in one revolution of the chuck. Pieces passing the caliper are still thicker than 1 in. until some which have been ground by the wheel in its new position get around. Finally some come to the caliper that are 1 in. thick. The frictional pull on the shoe then ceases, and it returns to its neutral position, which opens the contact. The magnet releases a plunger by which the feed is locked until the caliper again operates.

The automatic control is advantageous even when grinding work on one side as it relieves the operator from making frequent adjustments to compensate for wheel wear.

For greater convenience in handling circular pieces of medium size, a dial or loading table is used. The operator arranges a row of pieces around the dial and can then step away for a minute while the continuously moving dial feeds them onto the chuck. Rings of hardened alloy steel, 3¼ in. diameter, are thus ground on two sides at the rate of 630 pieces or 1260 surfaces per hour to limits of -0.0001 in., parallel within 0.0005 in.

Not Limited to Flat Shapes

The machine is not limited to flat shapes or magnetic material. By means of fixtures, pieces are held for grinding one surface square with another or at any required angle. The fixtures are circular in shape with from twenty to sixty stations around the circumference, each station having the locating surfaces and clamp for holding a piece of work such as a valve tappet. Usually, as in this tappet fixture, a cam is arranged to open clamps at two positions, first, where the operator drops the pieces into the fixture, and second, where the unloader guides the work off the fixture into the discharge chute.



Here and There in Foreign Markets

By special arrangement with the Automotive Division, Bureau of Foreign and Domestic Commerce

Sao Paulo Show Postponed

THE Automotive Division of the Department of Commerce is advised that the automobile exposition which was originally scheduled to take place in Sao Paulo in October has now been postponed until November 7 to 15. Further announcement is made that the date of the good roads conference in Pernambuco, Brazil, has been postponed to December 1 to 8 and provides that "the representatives of the proprietors of vehicles shall present figures showing the roads which it is most important to build, including bridges and complementary works, and estimated expenditures."

Import Quota Increased

CABLE dispatches advise that the foreign office of Czechoslovakia have consented to an increase in the contingent of automobiles for the current year of from 500 to 700 cars. It is expected that the 700 permits will be exhausted before the first of October. The dispatches explain that increased demand for automobiles during the past few months has taxed the production capacity of local factories and has caused an increase in imports. Czechoslovakia manufacturers have been unable to make delivery under three months and have even been obliged to buy bodies from other manufacturers to do this.

Duties Lowered in Africa

CONSULAR dispatches advise that the schedule of duties applying to French Equatorial Africa (except Gabon) has been modified according to a decree of June 30 published in the French Journal Officiel for July 4, 1925. Automobiles and trucks of all kinds formerly dutiable at 10 per cent ad valorem, are now dutiable at 5 per cent ad valorem.

Greek Exhibit Postponed

THE Automotive Division of the Department of Commerce has been informed that the International Sample Fair, which was scheduled to be held at Saloniki, Greece, from Oct. 18 to 31, has been postponed until next April.

Car Famine in Java

CONSULAR advices to the Automotive Division of the Department of Commerce from Java report "a shortage of automobiles."

England Aids Cab Firm

THE English House of Commons, under the Trade Facilities Act, has decided to grant an advance or guarantee of 365 thousand pounds to the Beardmore people to enable them to construct and place on the streets of London approximately 750 new taxicabs. The taxicabs are to meet the annual normal wastage of about 500 cabs per year, and it is stated this aid was granted because, without it, the orders for the cabs, which are urgently needed, would have gone to French, Italian and American firms.

Duty Increase Postponed

THE operation of Australia's increased duty on airplanes and other aircraft, including balloons and parachutes, which is now 10 per cent and which is to be increased to 35 per cent, has been further postponed until January 1, 1926.

Poland May Raise Duties

TEMPORARY increases in the duty of numerous importations, including automobiles, are proposed by the Polish Government. The purpose of the proposed increase is the improvement of the trade balance pending realization on the harvest.

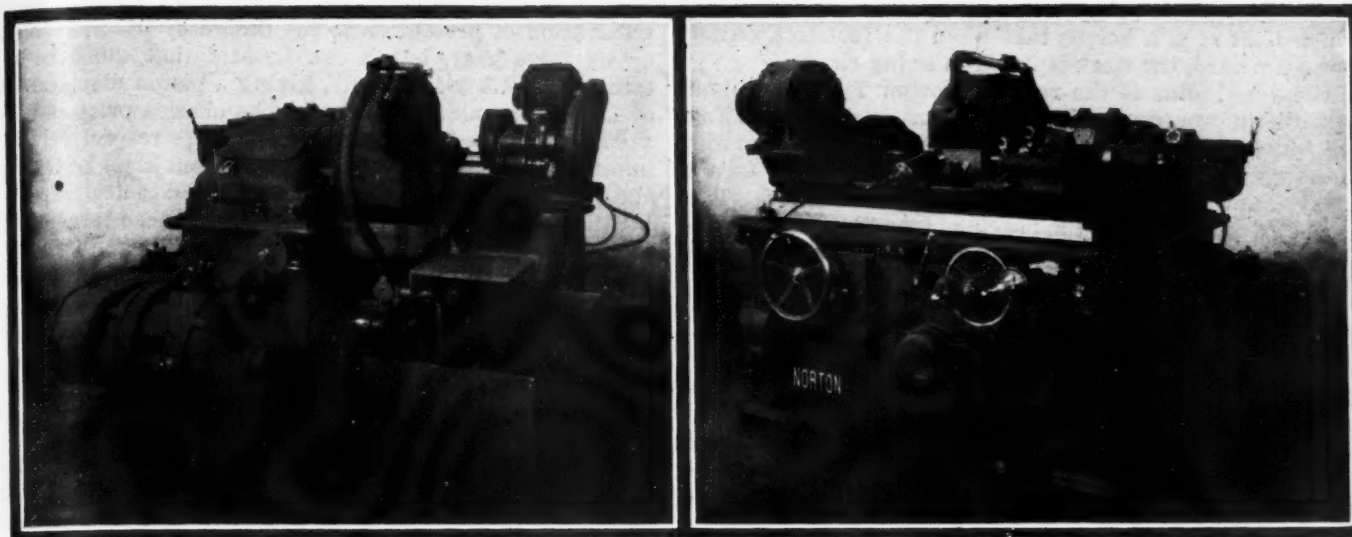
Dull Period in India

INDIA'S automotive market is seasonally dull. Some light lines are doing exceptionally well. High priced car demand small; stocks ample. A brisk revival is expected after the religious holidays and the end of monsoon, about October.

Oil Imports in England

THE importation of petroleum products into Great Britain during the first half of 1925 totaled 808,000,000 imperial gallons, an increase of 110,000,000 gallons, or nearly 16 per cent, over the importation for the first half of 1924.

The United States sent nearly 34,000,000 gallons of crude, which represents an increase of 32 per cent over the amount sent in the same period of last year, and the import of gasoline from the United States at 135,000,000 gallons also represents a gain of 8,000,000 gallons. A 3,000,000 gallon gain in kerosene was just about discounted by a comparable loss in the shipments of gas oil, and a slight gain was registered in the matter of transformer and other special varieties.



Front and rear views of Norton B semi-automatic grinding machine

New Norton Grinder Development Increases Production

Automatic controls added to special purpose machine and base and work carrying parts made heavier. Machine self-contained with two electric motors. One operator can tend two grinders

ANTICIPATING demands for higher production from cylindrical grinding machines without sacrifice in either accuracy or finish, the Norton Company of Worcester, Mass., have just brought out a new Type B semi-automatic machine. Starting and stopping of the work, the flow of grinding compound on the wheel, and the continuous power in-feed with rapid reverse at end of cut are all accomplished automatically by a cam and pneumatic valves and pistons. A single lever is moved to start the cycle of operations. These automatic features of the machine are incorporated with the idea of reducing the number of motions required of the operator to a minimum so that two machines can be operated simultaneously by one man.

The machine is substantially a Type BA special purpose machine with automatic controls added and the base and work carrying parts made heavier, giving greater rigidity and permitting higher production. It is entirely self-contained, carrying two electric motors rigidly mounted on the machine. Power for the grinding wheel and wheel feed is supplied by a standard constant speed motor bolted to the rear of the base, and the work is revolved on dead centers by a headstock mounting a standard adjustable speed motor. One of several points in favor of the main motor drive is the fact that the customer has a choice of several makes of standard motor, thus making it easier to secure motors promptly from stock.

The models completed provide 12 in. maximum swing over the swivel table and take 18 in. lengths between centers, although it is contemplated longer lengths of machine

will be added later. Wheels 20 in. in diameter and up to 9 in. thick can be mounted, making the machine capable of taking cuts up to 9 in. long. The Norton wheel spindle reciprocating attachment on the end of the wheel spindle gives the grinding wheel an oscillating motion of $\frac{1}{4}$ in. This feature tends to reduce wheel wear, produce a better finish and increase production.

Feed Controlled by Cam

The micrometric wheel feed is positively controlled by a cam which allows the wheel slide to move toward the work to a positive stop and then automatically reverse, moving the wheel back from the work. The automatic cycle is started by the simple movement of a lever, leaving the operator free to prepare work for the machine or look after another machine while the work is being ground. The cycle consists of starting the work revolution, turning on the flow of grinding compound, feeding the wheel toward the work to a positive stop, rapidly reversing the feed to back the wheel from the work, stopping the work revolution and shutting off the flow of compound. The rate of in-feed, which determines the time required for the cycle, can be varied to suit the different materials ground by convenient change gears on the front of the machine.

To remove the work from the centers, the operator has only to step on a pedal; this operates a valve controlling an air piston in the footstock, which actuates the motion of the footstock spindle, pulling the center from the work or the reverse, as desired. This allows the operator the use of both hands in removing the finished piece from the

machine and placing the next piece in position on the cradle, which is at such a height that when the footstock center moves forward, the work is lifted to swing clear.

The wheel slide is the regular Norton Type B design, with the improved spindle bearing construction providing for adjustment while the spindle is running. A reservoir in the wheel slide supplies lubricating oil by a chain driven pump to the spindle journal and thrust bearings. The stream of oil flowing on the bearings is visible to the operator through bull's eye glasses on the front of the wheel slide.

Grinding compound is supplied to the grinding wheel by a pump mounted on the main drive shaft. An extra large pump tank and a settling tank placed on the floor at the rear of the machine insure an abundant supply of clean compound on the grinding wheel.

The machine is intended for the grinding of such work as medium sizes of outer rings for ball and roller bearings, short shafts with wide cuts, bushings, and miscellaneous work within its capacity.

Six With Single Sleeve Valve

THE range of Vauxhall cars, of late years consisting solely of four-cylinder models, will be supplemented for 1926 by a Six with single sleeve valves that will be shown

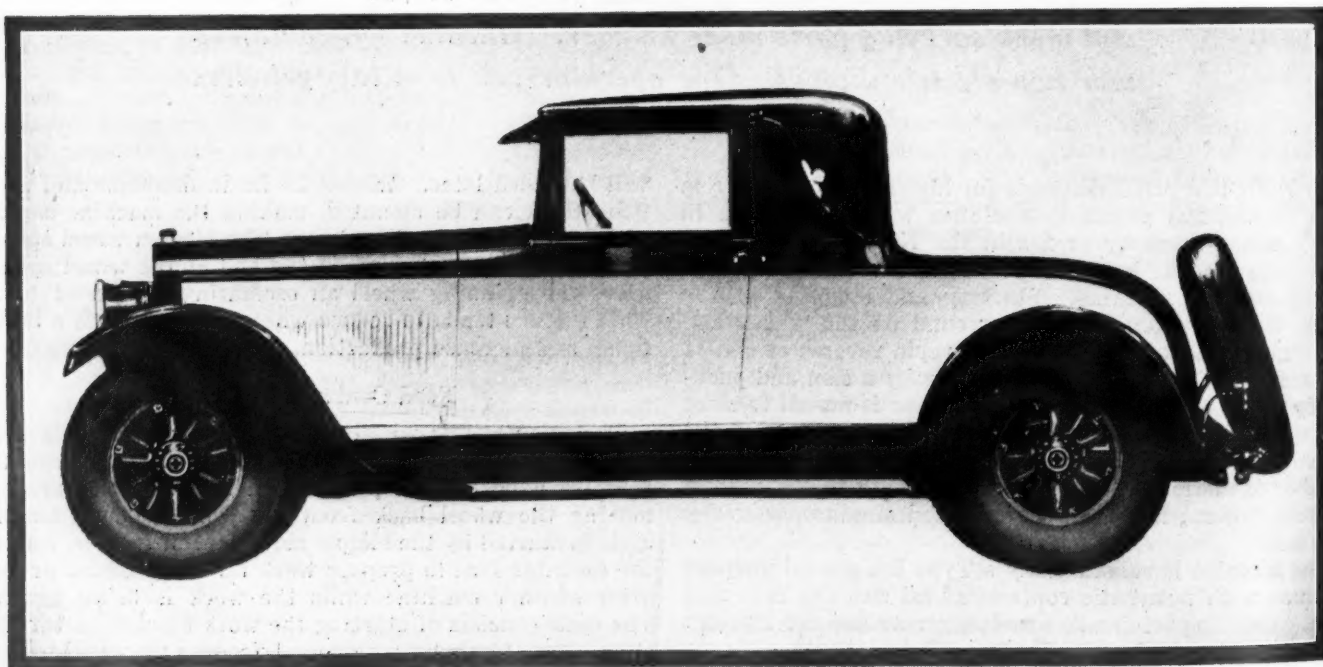
at Olympia in October. No information is available for publication at present as to the design of the new engine or its valve gear, but it can be said that the bore and stroke are 81.5 x 124 m. m., giving a piston displacement of 235 cu. in., almost 4 litres. The chassis price is to be £1050, while the wheelbase and track are respectively 136 in. and 58½ in. The three Fours (14-40 h. p., 23-60 h. p. and 30-98 h. p.) are to be offered unchanged in design.

Other makers who have recently announced new models to appear at Olympia are Lagonda and Hillman, both with larger (14 h. p.) Fours, Calcott with a Six to supplement two current Fours, and Humber with an enlarged edition of the 8 h. p. light car, to be termed 9-20 and to be offered with a small four-seated body.

A Novel Scout Monoplane

A SINGLE seater scout monoplane of a rather novel design has been built by the Atelier des Mureaux, of Paris. It is intended for use with the fleet and while it follows land plane design in general it can be landed on water by simply dropping off the undercarriage, which is easily done from the cockpit. The lower part of the fuselage is built of waterproof material and the front part is of a design similar to that used in flying boats. Two stumpy winglike floats project from its lower part near the nose to act as balancing floats.

Latest Rickenbacker Model is Coupe-Roadster



New Rickenbacker "Vertical-8-Superfine" coupe-roadster

RICKENBACKER MOTOR CO.'S latest model is known as the coupe-roadster. As shown in the photograph, it has the appearance and advantages of a coupe, with room for three passengers, but by bringing the concealed rumble seat into service it answers as a five passenger roadster. The model is available on both the six and eight cylinder chassis, the price complete on the former being \$1,695 and on the latter \$2,095.

A two-tone color scheme of dust grey and desert brown

is used. The body has low graceful lines and is upholstered in a velvet velour. The de-luxe models on the eight cylinder chassis, which are the same as the others except for additional equipment, are finished with mohair instead of velour for the interior.

Equipment is the same as on other Rickenbacker closed cars and includes the following: "VV" windshield, automatic windshield cleaner, rear view mirror, coincidental lock and stop light.